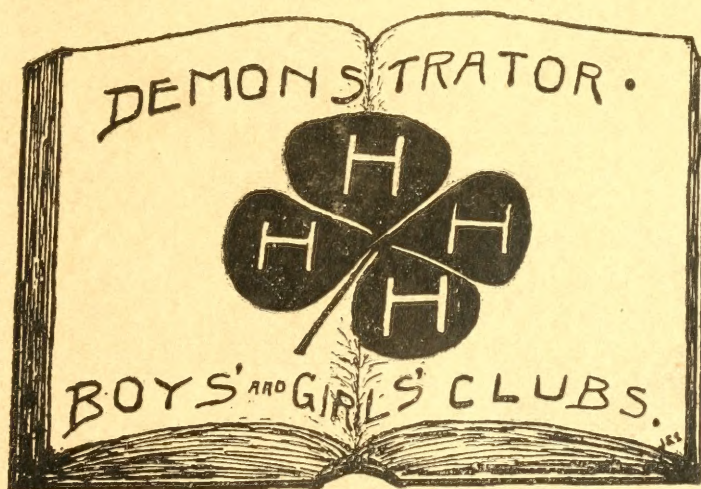


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A MANUAL ON BOYS' AND GIRLS' AGRICULTURAL CLUB WORK

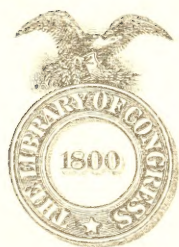
Compiled by
W. J. JERNIGAN
State Boys' and Girls' Club Agent



*For the Development of the
Head, Heart, Hands and Health*

EXTENSION DIVISION
COLLEGE OF AGRICULTURE, UNIVERSITY OF ARKANSAS
U. S. Department of Agriculture, Co-operating





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A MANUAL

ON

BOYS' AND GIRLS' AGRICULTURAL CLUB WORK

Designed Especially for Use of Rural Teachers

COMPILED BY

W. J. JERNIGAN

State Boys' and Girls' Club Agent

Arkansas University, College of agriculture.
" Extension service



EXTENSION DIVISION

COLLEGE OF AGRICULTURE, UNIVERSITY OF ARKANSAS

U. S. Department of Agriculture, Co-operating

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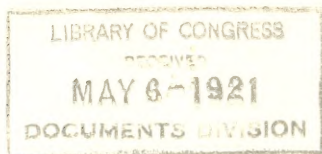
To Teachers and School Officials:

I have carefully examined this manual and I find it just what I have for sometime wanted to see issued on the Boys' and Girls' Agricultural Club Work as it is organized and managed in this State. I am deeply interested in this work and will, as I have always done, use my influence in helping to make it a success throughout the entire State for I consider this work as being no small factor in our system of education for giving thoroughly practical training to our farmer boys and girls. I, therefore, do not hesitate to urge all rural teachers in this State to have, if possible, an organization of clubs such as is outlined in this manual, and, further, to recommend that this manual be used, wherever practicable, as the writer has intended it, that is, as a supplement to the regular textbook in agriculture.

It would certainly be very gratifying to me to be able to say for our State that every rural school having boys and girls between the ages of 10 and 18 has a regularly organized Agricultural Club, and this, I know, is the desire of those in charge of this work in the State. Just a little coöperation from each school that is ready for this work will bring this about and I shall take great pleasure in doing all I can, both directly and indirectly, in securing this coöperation.

Yours truly,

J. L. BOND,
State Superintendent of Public Instruction.



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J. B. PEERY, Beef Cattle Production.

NEGRO WORKERS.

H. C. RAY, District Agent.

MARY RAY, District Agent.

INTRODUCTION.

This Manual is simply an embodiment of all rules and regulations that pertain to the organization and management of Boys' and Girls' Agricultural Club Work as carried on in this State by the Extension Division of the University of Arkansas in coöperation with the United States Department of Agriculture, and the instructions that go to the members of the various clubs during the year. It has been prepared especially for the use of teachers in the rural schools who feel the need of this phase of work in Agriculture, and who desire to help in promoting same. It is intended that this Manual be used to supplement the regular text in Agriculture, and it is hoped that it will prove a great help to the teacher in vitalizing not only the work in Agriculture, but all school work. The lessons herein contained are sent in separate forms to the members of their respective clubs at seasonal periods of the year. Members should be asked to bring these lesson sheets to school for use in their recitation work. The performance of the actual club work with the plants or live stock will simply be the means of putting into application the principles contained not only in this Manual but in the textbook on Agriculture, and should be considered as a laboratory exercise of all work in Agriculture.

SCOPE OF THE WORK.

The Boys' and Girls' Agricultural Club Work is a part of the regular Extension Work that is conducted by the College of Agriculture of the University of Arkansas, in coöperation with the United States Department of Agriculture, and consists of Corn Clubs, Cotton Clubs, Peanut Clubs, Potato Clubs, Wheat Clubs, Pig Clubs, Calf Clubs, and Sheep Clubs for the boys, and Canning Club, Poultry Clubs and Butter Clubs for the girls.

However, any boy or girl may join any of the clubs, but of course it is preferred that the boys raise corn, pigs, cotton, peanuts, calves, etc., and that the girls confine their activities to growing an all-around garden; raising poultry for home use and for the market; conserving foods by drying, canning, preserving, brining, etc.; to planning, cooking, and serving meals of home-grown products; to making better bread and better butter; to cutting, making, and mending garments and household articles, such as caps, aprons, house dresses, laundry bags, dish towels, dresser scarfs, etc.; to making baskets of willow, oak splits, and other native materials; caring for the sick in the home and to improving the sanitary and social conditions of the home and in the community. As an indirect result of the women's work, the girls will be taught to make and use fireless cookers, iceless refrigerators and other labor saving devices.

HOW THE WORK IS ORGANIZED.

The active work of organization is done through the County Agents who are assisted by the specialists in charge of the Club Work, whose duty it is to plan the work, prepare literature for the various clubs, and help in the organization and management of the work.

The County Agents are further assisted by the rural teachers and County Superintendents in the matter of organization; the business men, the women's clubs, commercial clubs, railroads, and all other forms of commercial organizations render valuable assistance throughout the year in the organization and management of the work.

Application cards for membership in the various clubs which all members are required to fill out, a copy of which follows, below, are furnished the local agents, who, after indorsing and making a copy for self, forward same to the State Agent, who in turn forwards copy to the State College and to the Washington office, thereby having each member's name enrolled at three different centers, which entitle them to all literature mailed out from those points.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

APPLICATION FOR MEMBERSHIP IN BOYS' AND GIRLS' AGRICULTURAL CLUBS.

I hereby make application for membership in the Boys' and Girls' Agricultural Club, agree to grow the crops or live stock as indicated below, follow instructions, keep a complete record, and report on same in the fall.

Name.....Age.....

Name of parent or guardian

Post Office.....State.....

R. D. No.....County.....Date.....

Name of school

Note.—Make a cross (X) opposite club or clubs you desire to join.

.....Corn, 1 acre	.....Potatoes (Irish), $\frac{1}{8}$ acre	.....Pig
.....Cotton, 1 acre	.....Potatoes (Sweet), $\frac{1}{8}$ acre	.....Poultry
.....Canning, $\frac{1}{10}$ acre	.....Peanuts, 1 acre	.....Sheep
.....Onion, $\frac{1}{8}$ acre	.....Wheat, 1 acre	.....Calf

GENERAL RULES FOR MEMBERSHIP IN ALL CLUBS

1. All boys and girls desiring to join any club must be between the ages of 10 and 18 on the first of January of any given year.

2. Members of any club will be required to do their own work, except in cases of very heavy work, which they may have done by others by charging this expense to their account.

3. All members are required to keep a record of the work in whatever club or clubs they belong to throughout the year and submit same in the fall, when called upon.

4. Members will be asked to make an exhibit of their products in the fall of the year either at the County Fair or County Contest, where they will compete for prizes which will be awarded at that time.

SPECIAL REGULATIONS FOR EACH CLUB.

CORN CLUB.

1. Each member of the Corn Club is required to take one measured acre of 4,800 square yards, which should be measured at the beginning by two disinterested witnesses.

2. Each member must keep an account of the number of hours he works, number of hours he uses his horse during the year, and the record book must show the cost of production as follows:

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

(1) Rent for land per acre.....	\$5.00
(2) Per hours worked by each member.....	.10
(3) Per hours worked for each horse used.....	.05
(4) Per two-horse load stable manure (2,000 lb)....	2.00
(5) Commercial fertilizers at actual cost.....	
3. Prizes will be awarded according to the following rules:	
(1) Greatest yield per acre.....	30 %
(2) Best showing of net profit.....	30 %
(3) Best exhibit of products.....	20 %
(4) Best written history, "How I Made My Crop"....	20 %
<hr/>	
Total.....	100 %

4. Two disinterested parties must witness the weighing of the corn and the following rules should be used: Weigh all corn in the shuck when it is dry. Then weigh out 100 pounds separately. Shuck and shell this 100 pounds and weigh the shelled corn. Multiply the weight of all the corn in the shuck by the weight of the shelled corn. Point off the two right-hand figures and divide by 56. This will give the yield in bushels of shelled corn per acre.

5. Each member must use the following form, found in the back of his Daily Record Book, in verifying the measurement of his land and weighing of his corn.

State of Arkansas, County of

I hereby certify that the plat of land upon which I planted and cultivated my corn is.....yards long and.....yards wide, and contains 4,480 square yards, or one acre.

Signed member.....

Witnesses: Post Office.....

Date.....

State of Arkansas, County of.....

I hereby certify that my corn was harvested after it was thoroughly matured and in a dry condition. The percentage of shelled corn was obtained in accordance with Rule No. 4 of this bulletin.

The percentage was.....

Total weight was.....lb

Total yield was.....

Signed member.....

Witnesses: Post Office.....

Date.....

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

COTTON CLUB.

1. Each member is required to take one full acre which should be measured in the beginning in the same manner as for corn.
2. The same charge for production, including land rent, barnyard manure, time charged per hour for self and horse, will be charged for Cotton Club members as for Corn Club members.
3. The weight of the cotton must be witnessed by both weigher and ginner, who will sign the regular form found in the back of the daily record book.
4. An exhibit of cotton shall consist of ten open bolls, one-half pound lint, and one pound seed cotton.
5. The four points contained in the score card for corn will be the same points by which the best record in the Cotton Club will be determined.

PEANUT CLUB.

1. Members of this club shall take one measured acre the same as for cotton and corn.
2. Charges for production, including land rent, barnyard manure, time per hour for self and horse, will be charged in this club the same as corn or cotton clubs.
3. In determining the number of bushels of peanuts per acre, the following rules shall be observed:
 - (1) Weigh the entire crop of peanuts and vines together.
 - (2) Weigh out 100 pounds of peanuts and vines.
 - (3) Pick the nuts from this 100-pound lot and weigh them.
 - (4) Multiply the entire weight of the peanuts and vines by the weight of the peanuts picked from the 100-pound lot, point off the two right-hand figures and divide by 30, if the peanuts are of the Spanish variety, and by 22 if the peanuts are of the large or Jumbo variety. This will give the number of bushels per acre.
4. An exhibit shall consist of one peck of seed peanuts and ten vines with peanuts on them.
5. The same four points for determining the best record in the corn club will be considered in determining the best record made in the Peanut Club.

POTATO CLUB.

1. Members of this club are required to take one-eighth acre which should be planted in both spring and fall potatoes, thereby giving two crops during the year.
2. The same regulations for keeping of records, cost of production, etc., will be charged in this work as for other clubs.
3. An exhibit shall consist of one peck of potatoes.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

4. The same four points contained in score card for corn, that is, greatest yield, best showing of profit, best exhibit and best history of the crop, will be used in determining the best record made in this club.

WHEAT CLUB.

1. Members of this club will be required to take at least one acre, but may plant more if they desire. One acre, however, will be the basis for competition.

2. Records of cost of production, methods of growing the crop, must be kept in this club the same as for others.

3. An exhibit shall consist of one peck of wheat.

4. The same four points for determining the best record will be used in this club as in the other clubs.

PIG CLUB.

Work in the Pig Club for boys and girls will be conducted along the following lines:

First year members may select, if possible, a pure-bred gilt during the early part of the year and care for it until the following fall, at which time it should be bred with the view of raising one or more litters—depending upon the age of the sow the following year; or they may select a pure-bred boar for breeding purposes; or they may select and raise a barrow or sow for meat purposes.

Second year members are urged to raise one or more litters, depending on the age of the sow, from the gilt that he cared for during the first year.

The third year's work will be a continuation of the second year, to which may be added the Ham and Bacon Club.

Each member is required to keep a record book showing the kind of feed and kind of pasture used, the cost of each, and the number of pounds of gain made by the pig and cost of same. This is required of all members, whether they have one pig or a sow and litter. This record book is to be mailed to the County Agent at the end of the year, or to the State Pig Club Agent if there be no County Agent.

Members will be required, where possible, to make an exhibit at their County Fair or Contest where prizes will be awarded according to the following score card:

(1)	The best hog with respect to the purpose which it is to serve.....	40 %
(2)	The greatest daily gains on hogs.....	15 %
(3)	Cheapest cost of production.....	25 %
(4)	Best kept record of the feeding and care of the pig.....	20 %
	Total.....	100 %

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

The following charges for feeds and pastures should be made by each member. When two or more of these pasture crops are used at the same time, charges for the costlier one must be made:

Market prices for corn, shorts, peanut meal, velvet bean meal, tankage, and other concentrated feeds, should be charged.

Two cents per gallon should be charged for skim milk, and one cent per gallon for kitchen slop.

Seventy-five cents per month for each pig must be charged for green corn, cane, sorghum, vegetables, etc.

Twenty-five cents a week, or three cents a day, must be charged for the following pastures: Peanut, chufas, sweet potatoes, cowpeas, velvet beans.

Twenty cents a week will be charged for the following pastures: Rape, Japanese cane, sorghum, Sudan grass, clover, vegetables.

Thirteen cents a week will be charged for oats, rye, or barley.

Two and one-half cents a week will be charged for woods pasture.

Seven cents a week will be charged for Bermuda grass or crab grass.

Ten cents a week will be charged for cornfield after harvesting.

CALF CLUB.

1. Members desiring to grow the beef type of cattle are urged to select high-grade calves about eight or ten months old in the fall of the year, or around weaning time.

2. Members desiring to grow dairy cattle for the purpose of selling dairy products or dairy cattle will be asked to select high-grade heifers eight or ten months old, or, if they prefer, high-grade bred heifers, in the fall of the year.

3. Members desiring to grow fat calves for beef production should select high-grade calves in the fall of the year and care for them until the following fall.

4. Members of this club will be required to follow instructions as far as possible in arranging pastures, growing feed, prevention of diseases, etc.

5. Wherever possible, members will be asked to exhibit their calves at the County Fair or Contest, where they will be judged according to the score of whatever breed of cattle is exhibited.

SHEEP CLUB.

1. Members of this club will be asked to select in the fall of the year high-grade bred ewes, if possible, or high-grade lambs, and care for the same during one entire period or year.

2. Members will be required to follow instructions, as far

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

as possible, in growing the feed that is necessary for the cheep, for the prevention of diseases, and management of the sheep.

3. Members will be asked to exhibit their sheep at the County Fair or Contest.

CANNING CLUB.

1. Members of this club shall take a plat of one-tenth acre and plant to tomatoes or other vegetables, as directed in Lesson No. 7.

2. Each member must keep a record of all work performed in connection with her garden on record books furnished for this purpose, the records to show the actual number of pounds of vegetables grown, the amount canned or used at home, and the cost of all such operations.

3. Each member is asked to make an exhibit of her products at the County Fair or Contest.

4. In addition to the daily record book, each member is urged to prepare a booklet on how she grew her one-tenth acre garden, which should be submitted with her record book.

5. As a part of the work in sewing, each girl is required to make for herself a cap and apron, the kind used throughout the State by all Canning Club members.

POULTRY CLUB.

(See Instructions in Lesson No. 1.)

ORGANIZATION OF COMMUNITY CLUBS.

BOYS AND GIRLS.

It is necessary that club members form themselves into groups or clubs in order that they may receive from all available sources, the help that is possible to give them. By organizing into clubs, they will derive the following advantages:

1. The County Agent and County Superintendent can meet with the members more regularly and thus give more frequent and needed instructions.

2. The members will learn the value of pulling together, buying together, selling together, and coöperating in all phases of community betterment.

3. The members will learn the rules of parliamentary practice, the methods of organizing and conducting meetings of any and all kinds, and will receive good training in public speaking.

4. The club, as a whole, may get the benefit of each member's experience in the management of his or her crop, live stock, etc., thus giving the knowledge of each to all.

5. By being organized into groups, it will be easier to secure extra speakers or instructors at the regular meetings.

6. In short, the principle that "In Union there is Strength," may be developed in many if not all phases of social life, and by grouping themselves together, the members will be placing themselves so that it will be possible for the supervisors of the work, both County and State, to give them assistance, which they could not otherwise give them.

HOW TO ORGANIZE A COMMUNITY CLUB.

There should be no fixed geographical limit for the local or Community Club. It may consist of one or more school districts, or of only parts of districts. The township is often a convenient unit for organization. Any community where boys and girls can conveniently get together for club meetings may determine the territory of the local club.

It is suggested that the teacher call a meeting of the boys and girls for the purpose of organizing a community club. The County Agents and County Superintendent, should be present to assist in the organization. It should be explained at this meeting that the club will consist of members, both boys and girls, from all of the Agricultural Clubs that may be organized in that community. The County Agents or whoever may be present, as leaders in the organization, should explain fully the purpose of the organization and what is hoped to be accomplished at the several meetings during the year. The suggestive program which follows might be read with the view of giving the members an outline of what is to be accomplished during the year.

The club should elect at least three officers: President, Vice President, Secretary-Treasurer, and possibly a fourth officer, a reporter, whose duty it is to report the results of each meeting.

If thought best, committees might be appointed on membership, entertainment, and programs.

Care should be taken in selecting the local leader or president, for a great deal will depend on him or her in holding the meetings together during the year. It would be best to select some one who has had more or less experience in Club Work, or work of this nature. It might be well for the teacher to act as local leader, for a while at least.

If possible, the County Agents or County Superintendent should be present at all meetings, and parents should also be urged to attend.

Meetings should be held once a month, either at school-houses or other central points, or even at the homes of the members. In some cases, it may be best to hold separate meetings of the boys and girls, but many of the meetings may be joint meetings.

The names of the officers of each club should be forwarded to the County Agent by the Secretary of the Club, who in turn should forward same to the State Officers.

SUGGESTED CONSTITUTION FOR BOYS' AND GIRLS' AGRICULTURAL CLUBS.

I. NAME OF THE CLUB.

This Club shall be known as the.....
Agricultural Club of.....County.

II. OBJECT OF THE CLUB.

1. To teach the boys the fundamental principles of Agriculture and the best principles of live stock growing.
2. To teach the girls the principles of gardening, poultry growing, and home science and home building.
3. To teach the advantages of organization and coöperation in the marketing of their products.
4. To teach the rules of parliamentary practice, the methods of organizing and conducting meetings.
5. To teach the principle that "In union there is strength," and to develop more and better phases of social life.

III. MEMBERSHIP.

Boys and girls who are members of the Agricultural Clubs may be members of this Club.

IV. OFFICERS.

The officers of this Club shall consist of President, Vice President, Secretary-Treasurer and Reporter.

V. DUTIES OF MEMBERS.

The duties of the members shall be those laid down in the regular rules for each club.

VI. DUTIES OF OFFICERS.

It will be the duty of the President to call meetings and preside over same, and, in his absence, the Vice President shall take the chair. It will be the duty of the Secretary-Treasurer to keep a record of all meetings and report same to the County Agent, and to account for any funds that may be handled through the organization. It will be the duty of the Reporter to furnish to the local newspapers the progress of the Club, interesting meetings, etc.

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COMMUNITY CLUB RECORD CONTEST.

AGRICULTURE — BOYS AND GIRLS.

The following score card will be used in determining the Community Club that has made the best record in the county:

1. Largest number of boys and girls enrolled.....	25
2. Highest average attendance at Community meetings....	25
3. Highest average percentage of members submitting complete reports	25
4. Highest average percentage of members making exhibits.....	25
Total.....	100

COMMUNITY CLUB EXHIBIT CONTEST.

AGRICULTURE — BOYS AND GIRLS.

Each Community Club for boys and girls will make its exhibit as a unit, which will be judged by the following score card:

1. Quantity (greatest number of exhibits).....	50
2. Quality (highest total score of individual exhibits).....	50
Total.....	100

Note.—By “greatest number of exhibits” is meant that each member will be permitted to make one exhibit from whatever club or clubs to which he or she belongs. For instance, if a boy belongs to the Corn, Pig, and Cotton Clubs, he will be permitted to make an exhibit from each one, which will count three exhibits, and so on for all members.

By “highest total score of individual exhibits” is meant that each individual exhibit will be scored separately and then all totaled.

SUGGESTED PRIZES FOR COMMUNITY CLUBS.

1. Loving cup.
2. Suitable library for club members.
3. Victrola for school.
4. Stereopticon machine.
5. Basket-ball set.
6. Baseball set.
7. And many other similar and suitable things.

Note.—The offering of community prizes does not forbid the offering of individual prizes.

TOPICS TO SELECT FROM IN PREPARING PROGRAM FOR BOYS' AND GIRLS' AGRICULTURAL COMMUNITY CLUB MONTHLY MEETINGS.

(Meetings may be held jointly or separately, and once a month if possible.)

FOR BOYS.

JANUARY TOPICS.

1. (Corn) How to select the acre for demonstration. (Circular No. 1.—Corn.)
2. (Pig) Points to look for in selecting pig for breeding purposes. (Circular No. 2.—Pig.)
3. (Potatoes) Preparing seed bed, and fertilization. (Circular No. 1.—Potatoes.)
4. (Sheep) Management of ewe before lambing. (Circular No. 4.—Sheep.)
5. (Pig) What type of hog is best—big-boned or small-boned?
6. (Pig) Value of one breed for our community. (Write for special information.)
7. (Corn) Barnyard manure, value, how and when to apply. (Circular No. 1.—Corn.)
8. (Cotton) Early spring preparation for seed bed. (Circular No. 1.—Cotton.)
9. (Calf) How I am housing, feeding, and managing my calf.
10. (Corn) How much plant food will a 50-bushel yield of corn remove from the soil? (Circular No. "A" 70.—Farm Manure and Fertilizers.)
11. (Reports) Reports from each member on what he has done.
12. (Instructions) County Agents explain how to keep record books.
13. (Instructions) County Agents explain score card by which the club as a whole will be judged.

FEBRUARY TOPICS.

1. (Pig) Pastures for Pigs. (Circulars Nos. 3, 5, and 6; also Farmers' Bulletin No. 411.)
2. (Calf and Sheep) Spring pastures. (Circular No. 3.—Sheep.)
3. (Corn) How to prepare a good seed bed. (Circular No. 2.—Corn.)
4. (Corn) What is humus, its value and how secured? (Circular No. 1.—Corn.)
5. (Corn) Demonstration: Making seed corn tester, both box and rag doll.
6. (Corn) Varieties best adapted for our community. (Circular No. 3.—Corn.)
7. (Cotton) Preparation of seed bed. (Circular No. 1.—Cotton.)

8. (Potatoes) Selecting seed and planting. (Circular No. 2.—Potatoes.)
9. (Potatoes) Treating potatoes before planting for scab. (Circular No. 2.—Potatoes.)
10. (Live Stock) Rate of growth, calves, pigs, and lambs should make per day.
11. (Pig) How to make pure-bred pigs more popular in our community.
12. (General) What is meant by "Scientific Farming?"
13. (General) How I am caring for my farm machinery.
14. (Debate) Resolved, That vaccinating of hogs is profitable.
15. (Rotation) Describe a four-year rotation and show the place corn has in it.
16. (Reports) Report from individual members. (Never omit this.)
17. (Instructions) By County Agents and teachers.

MARCH TOPICS

1. (Corn) Methods of planting corn, and the best time. (Circular No. 4.—Corn.)
2. (Corn) Is good seed essential to large production, and why? (Circular No. 3.—Corn.)
3. (Corn) Obstacles to overcome in securing a perfect stand. (Circulars Nos. 1, 2, and 3.—Corn.)
4. (Pig) Early spring pointers. (Circulars Nos. 4 and 6.—Pig.)
5. (Pig) What is a hog for?
6. (Pig) Self-feeders, demonstrate, if possible. (Write for special information.)
7. (Live Stock) Paper—Feeding motherless pigs, calves, and lambs.
8. (Cotton) Selecting seed and planting. (Circular No. 2.—Cotton.)
9. (Potatoes) Cultivation. (Circular No. 3.—Potatoes.)
10. (Potatoes) Spraying for blight—demonstration. (Circular No. 3.—Potatoes.)
11. (Peanut) Preparing the seed bed. (Circular No. 1.—Peanut.)
12. (Live Stock) Permanent pastures, and how to secure them.
13. (Corn) Report on the acreage of corn in County—in the State.
14. (Corn) How acreage of corn compares with other crops in County—in State.
15. (General) Some "leaks" on the farm, and how to stop them.
16. (Reports) From individual members on progress of work.
17. (Instructions) By County Agents and teachers.

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APRIL TOPICS.

1. (Pig) Sanitation: How to keep pigs free from lice, worms, and cholera. (Show by demonstration, if possible. Farmers' Bulletin No. 566, page 9.)
2. (Pig) How much should pigs weigh at different ages. (Circular No. 4.—Pig.)
3. (Pig) Growing and feeding rape. (Circular No. 3.—Pig; Farmers' Bulletin No. 411.)
4. (Sheep) Feeding the ewe and lamb. (Circular No. 2.—Sheep.)
5. (Corn) How to regulate the planter.
6. (Corn) Report on test made for germination at last meeting.
7. (Corn) How the corn plant grows. (See Textbook.)
8. (Corn) Early cultivation, getting ahead of the grass and weeds. (Circular No. 5.—Corn.)
9. (Cotton) Early cultivation, kind of implements to use. (Circular No. 3.—Cotton.)
10. (Peanut) Planting. (Circular No. 1.—Peanut.)
11. (General) Farms that do not fail.
12. (General) How to make our club bigger and better.
13. (General) How we can help each other through our club.
14. (General) What is a farm laborer worth "from his shoulders down?" "From the top of his head down?"
15. (Debate) Resolved, That filthy conditions kill more pigs than cholera.
16. (Debate) Resolved, That if we had more birds we would have fewer insects.
17. (General) Harmful insects, helpful insects.
18. (General) Harmful birds, helpful birds.
19. Instructions by County Agents.

MAY TOPICS.

1. (Corn) Insects and diseases, and how to combat them.
2. (Corn) Reports on stand by each member.
3. (Corn) How I secured a perfect stand of corn.
4. (Corn) Number of stalks on my acre, and what I expect to make.
5. (Corn) How often, how deep, and how late to cultivate. (Circular No. 5.—Corn.)
6. (Pig) How I make my pig gain a pound a day. (Circulars Nos. 4 and 5.—Pig.)
7. (Pig) Demonstration on how to make lime-charcoal mixture.
8. (Calf) How I am making my calf gain two pounds a day.
9. (Sheep) Caring for the spring lambs. (Circular No. 5.—Sheep.)
10. (Pig) Recitation, Coburn's panegyric on "His Majesty, the Hog." (In Duroc-Jersey Bulletin, March 1, 1916, page 5.)

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11. (Peanut) Cultivation. (Circular No. 2.—Peanut.)
12. (Potatoes) Digging and handling. (Circular No. 4.—Potato.)
13. (Cotton) Thinning and cultivation. (Circular No. 3.—Cotton.)
14. (Cotton). How I secured a perfect stand.
15. (Debate) Resolved, That there is more in feed than in the breed.
16. (Debate) Resolved, That a lead pencil is the most useful implement farmers can use.
17. Instructions by County Agents and teachers.

JUNE TOPICS.

1. (Corn) Does it pay to cultivate late? (Circular No. 5.—Corn.)
2. (Corn) Should we pull fodder? —
3. (Corn) Planting cowpeas or other legumes in the corn.
4. (Pig) The school pig: How to secure one.
5. (Live Stock) Summer care of pigs, calves, and lambs.
6. (Potatoes) Preparing for fall planting.
7. (Cotton) When should we stop plowing? (Circulars Nos. 3 and 4.—Cotton.)
8. (General) How to keep land from washing.
9. (General) How to build up a run-down farm.
10. (General) Labor-saving implements.
11. (General) Why we could not run this club without girls.

Note.—The program for this month might consist of field demonstrations in late cultivation, care, and management of live stock.

JULY TOPICS.

1. It is suggested that this meeting be held in conjunction with the Girls' meeting, and assist them in their canning demonstrations.

AUGUST TOPICS.

1. (Corn) Describe an ideal stalk of corn, and illustrate by example. (Circular No. 8.—Corn.)
2. (Corn) Describe an ideal ear of corn, and illustrate by example. (Circular No. 8.—Corn.)
3. (Cover Crops) Kind and value of. (Circular No. 7.)
4. (Pig) Fall and winter pastures. (Circulars Nos. 3 and 6.—Pig.)
5. (Calf and Sheep) Fall and winter pastures. (Circulars Nos. 2 and 3.)
6. (Corn) What constitutes a good exhibit? (Circular No. 8.)
7. (Peanut) What constitutes a good exhibit?
8. (Pig) How to prepare your pig for exhibit. (Circular No. 8.—Pig.)
9. (Wheat) Soil requirements and time to plant. (Circulars Nos. 1 and 2.)
10. (Wheat) How to prepare the seed bed. (Circular No. 1.)

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11. (Wheat) Treating for smut before planting.
12. (Potato) Fall planting.
13. (Potato) How I kept my seed from the early crop.
14. (Record Book) Who has a perfectly kept record book? (Reports from all members.)
15. Instructions by County Agents and teachers.

SEPTEMBER TOPICS.

1. (Corn) Field selection of seed. (Demonstrate in field. Circular No. 6.—Corn.)
2. (Pig) Fall rape. (Circular No. 3.—Pig.)
3. (General) How can we make the best community exhibit?
4. (General) Who will make an exhibit? (Reports from all members.)
5. (Live Stock) What are we doing now for the calves and lambs?
6. (Live Stock) Housing the pigs, calves, and lambs.
7. (General) Taking care of our farm machinery.
8. (General) How may our club become more useful to our community?
9. (Pig) Producing strong pigs. (Circular No. 10.—Pig.)
10. Instructions by County Agents on How to prepare exhibits.

OCTOBER TOPICS.

1. (General) Reports from each member on what he saw and learned at the Fair.
2. (General) Discussion, How can we all profit from our Community Fair?
3. Instructions by County Agents.

NOVEMBER TOPICS.

1. (Corn) Value of corn crop in County. In State.
2. (Corn) Average yield of Corn Club boys compared with that of the State.
3. (Cotton) What is our cotton crop worth? County? State?
4. (Pig) What is our hog crop worth? County? State?
5. (Pig) How does our county compare with other counties in pork production? (See Year Book.)
6. (Corn) Compare Arkansas with other corn-producing States. See Year Book.)
7. (General) What is the value of all club products raised by our club?
8. (Pig) Managing the sow and litter. (Circular No. 11.—Pig.)
9. (Sheep) The profit I have made from sheep.
10. (General) Who has bank accounts? (Reports from all members.)
11. Instructions by County Agents and teachers.

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DECEMBER TOPICS.

1. (Corn) Judging corn by use of score card. (Circular No. 8.—Corn.)
2. (Corn) Fall and winter breaking. (Circular No. 2.—Corn.)
3. (Live Stock) Keeping the pigs, lambs, and calves warm.
4. (Pig) What I have learned that will help me next year.
5. (General) Suggestions from all as to how to make our club the best in the county.
6. Who has anything for sale? (All members report.)
7. Instructions by County Agents and teachers.

FOR GIRLS.

JANUARY TOPICS.

1. How to select a plot for tomatoes.
2. I have never measured a plot; how do I do it?
3. How to make a fireless cooker.
4. Using the fireless cooker at home.
How we can use the fireless cooker in school.
5. Song—"America."

FEBRUARY TOPICS.

1. How to make a hotbed.
2. Why I joined an Agriculture Club.
3. Why we should eat fruits.
4. How we may use dried fruits.
5. Making and serving of apple whip.
6. How can I make hen nests well and inexpensively?
7. Spelling match using words in February instructions.

MARCH TOPICS

1. How to transplant tomatoes.
2. How I made my corn bread.
3. How I made peanut biscuit.
4. Bread judging contest by girls.
5. What should I have in my record book by this time?

APRIL TOPICS.

1. How I staked and pruned my tomato plants.
2. Yeast bread: How I can use other things to save flour.
3. How mother makes light bread.
4. My experience in making bread.
5. I fed my chickens in this way.
6. Scoring of breads by club girls.
7. Song—"Conservation"

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MAY TOPICS.

1. How my plot looks.
2. Study of a healthy plant.
3. What other vegetable can I prepare to can?
4. Ways in which Club girls are using eggs in omelettes and combined with sauces.
5. Making of a home-made canner.
6. May Pole Dance.
7. Sealing cans by girls.

JUNE TOPICS.

1. What shall I have ready for canning?
2. The canning of English peas.
3. How I used strawberries fresh.
4. How I made strawberry preserves.
5. Troubles I have had with my chicks.
6. What I should wear in canning.
7. Can we secure standard exhibit jars by having a box supper, an ice cream supper, or a picnic this month?
8. The best tomato contest.
9. Song.

JULY TOPICS.

1. What shall I prepare for the fair in this county?
2. What kind of jars do I want? For exhibit use? For home use?
3. The things I have learned this month about canning.
4. Canning tomatoes and beans.
5. Special canning demonstration.

AUGUST TOPICS.

1. Let us dry all that we have not the jars to can. How? What?
2. How I made my drier.
3. How I am using my Pimento peppers.
4. Exhibit of dried fruits and vegetables by girls.
5. How I am keeping my canning up to "4-H" standards.
6. Yell for best assortment of dried fruits.
7. Soup mixtures.

SEPTEMBER TOPICS.

1. These are some of the ways in which we use cowpeas and soy beans.
2. How we can use the green tomatoes in pickle, mincemeat.
3. My record up to date.
4. Making Dixie Relish.
5. Our plans for a Community Fair and Sales Day.
6. Practice of songs and yells for Community Fair Day.

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OCTOBER TOPICS.

1. Is my record ready for the County Agent?
2. The exhibit I will carry to the County Fair next week.
3. How shall I make my booklet better?
4. Judging and scoring of exhibits of canned goods by girls.
5. Planting plot for this winter with cover crops.

NOVEMBER TOPICS.

1. Peanut butter: how I make it and use it.
2. What I saw at the County Fair.
3. The plans I have for my winter garden.
4. The care I am giving my canner and garden tools during the winter.

DECEMBER TOPICS.

1. Preparation for a happy Christmas.
2. How I made pot holders for my mother's Christmas present.
3. What we can use for Christmas that we have learned from Club Work.
4. Planting plot for this winter with cover crops.

SUGGESTED PROGRAM FOR JOINT MEETING.

(January as Example.)

1. (Canning) How I start my plants.
2. (Pig) Points to look for in selecting a pig.
3. (Corn) Things to guide us in selecting our acre.
4. (Potato) Preparing seed bed and fertilization.
5. (Sheep and Calf) Managing.
6. (Poultry) Is there a best variety for our club?
7. Setting the date and place for next meeting, reading program for same.
8. Instructions by County Agents.

Note.—The above program may be rendered within one and one-half hours by allowing ten minutes to each speaker on the regular program.

HOW TO CONDUCT A MEETING.

1. Meeting called to order by President.
2. Roll call by Secretary (Members may answer by naming common birds, etc.)
3. Reading and approval of minutes of last meeting.
4. Unfinished business.
5. New business (Report of different committees, especially membership).
6. Rendering of regular program.
7. Reports from individual members.
8. Closing exercise. (Songs, yells, etc.)
9. Motion to adjourn.

REFERENCE BULLETINS.

FOR CORN CLUB.

- Farmers' Bulletin No. 229, "Production of Good Seed Corn."
- Farmers' Bulletin No. 253, "Germination of Seed Corn."
- Farmers' Bulletin No. 415, "Seed Corn."
- Farmers' Bulletin No. 537, "How to Grow an Acre of Corn."
- Farmers' Bulletin No. 729, "Corn Culture in Southeastern States."

FOR COTTON CLUB.

- Farmers' Bulletin No. 625, "Cotton Wilt and Root Knot."
- Farmers' Bulletin No. 555, "Cotton Anthracnose: How to Control It."
- Farmers' Bulletin No. 601, "New Method of Cotton Culture, Its Application."
- Farmers' Bulletin No. 512, "Boll Weevil Problem."
- Farmers' Bulletin No. 501, "Cotton Improvement Under Weevil Conditions."

FOR PEANUT CLUB.

- Farmers' Bulletin No. 431, "The Peanut."

FOR PIG CLUB.

- Farmers' Bulletin No. 205, "Pig Management."
- Farmers' Bulletin No. 379, "Hog Cholera."
- Farmers' Bulletin No. 411, "Feeding Hogs in the South."
- Farmers' Bulletin No. 438, "Hog Houses."
- Farmers' Bulletin No. 566, "Boys' Pig Clubs."
- Farmers' Bulletin No. 913, "Killing Hogs and Curing Pork."
- Farmers' Bulletin, No. 906, "The Self-Feeder for Hogs."
- Circular No. 83, "Swine-Judging Suggestions for Pig Club Members."

FOR CALF CLUB.

- Farmers Bulletin No. 639, "Eradication of Cattle Tick."
- Farmers' Bulletin No. 580, "Beef Production in the South."
- Farmers' Bulletin No. 612, "Breeds of Beef Cattle."
- Farmers' Bulletin No. 655, "Cotton Seed Meal for Beef Production."
- Farmers' Bulletin No. 777, "Feeding and Managing of Dairy Calves and Young Dairy Stock."
- Farmers' Bulletin No. 811, "Production of Baby Beef."

FOR SHEEP CLUB.

- Farmers' Bulletin No. 576, "Breeds of Sheep for the Farm."
- Farmers' Bulletin No. 810, "Equipment for Farm Sheep Raising."
- Farmers' Bulletin No. 526, "Mutton and Its Value in the Diet."

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Farmers' Bulletin No. 840, "Farm Sheep Raising for Beginners."

FOR POTATO CLUB.

Farmers' Bulletin No. 295, "Potatoes and Other Root Crops as Food."

Farmers' Bulletin No. 324, "Sweet Potatoes."

Farmers' Bulletin No. 407, "The Potato as a Truck Crop."

Farmers' Bulletin No. 533, "Good Seed Potatoes and How to Produce Them."

Farmers' Bulletin No. 544, "Potato-tuber Diseases."

FOR CANNING CLUB.

Farmers' Bulletin No. 771, "Home Made Fireless Cookers and Their Use."

Farmers' Bulletin No. 808, "How to Select Foods: What the Body Needs."

Farmers' Bulletin No. 824, "How to Select Foods."

Farmers' Bulletin No. 817, "How to Select Foods."

Farmers' Bulletin No. 818, "Small Vegetable Gardens."

Farmers' Bulletin No. 256, "Preparation of Vegetables for the Table."

Farmers' Bulletin No. 391, "Economic Use of Meats in the Home."

Farmers' Bulletin No. 34, "Meats: Composition and Cooking."

Farmers' Bulletin No. 841, "Drying Fruits and Vegetables in the Home."

Farmers' Bulletin No. 582, "Green Vegetables and Their Use in the Diet."

Farmers' Bulletin No. 807, "Bread Making."

Farmers' Bulletin No. 861, "Removal of Stains from Clothing and Other Textiles."

Farmers' Bulletin No. 505, "Turnips, Beets, and Other Succulent Roots and Their Use as Food."

Farmers' Bulletin No. 468, "Potatoes, Sweet Potatoes, and Other Starchy Roots."

Farmers' Bulletin No. 565, "Corn Meal as a Food, and Ways of Using It."

Farmers' Bulletin No. 647, "Home Gardens in the South."

Farmers' Bulletin No. 653, "Honey and Its Use in the Home."

Farmers' Bulletin No. 717, "Foods for Young Children."

Farmers' Bulletin No. 900, "Home Made Fruit Butters."

Farmers' Bulletin No. 734, "Fly Traps and Their Operation."

Farmers' Bulletin No. 419, "Fats and Their Economic Use in the Home."

Farmers' Bulletin No. 884, "Saving Vegetable Seed for the Home and Market Garden."

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Farmers' Bulletin No. 850, "How to Make Cottage Cheese on the Farm."

Farmers' Bulletin No. 881, "Preservation of Vegetables by Fermentation and Salting."

Farmers' Bulletin No. 392, "Lesson on Tomatoes for the Rural Schools."

Farmers' Bulletin No. 607, "Farm Kitchen as a Workshop."
United States Food Leaflets (Secured from Food Administrator).

University of Arkansas Bulletin No. 116, "Varieties of Fruits in Arkansas."

FOR POULTRY CLUB.

Farmers' Bulletin No. 801, "Mites and Lice on Poultry."

CLUB LESSON TOPICS BY MONTHS FOR TEACHER'S GUIDE.

JANUARY.

- Pig—Circular No. 1.—Phases of the Work.
- Pig—Circular No. 2.—Selecting the Type.
- Corn—Circular No. 1.—Selecting the Acre.
- Corn—Circular No. 2.—Preparation of Seed Bed.
- Potato—Circular No. 1.—Soil: Its Preparation and Fertilization.
- Sheep—Circular No. 5.—Managing the Ewe and Lamb.
- Canning—Lesson No. 1.—Selecting the One-tenth Acre.
- Poultry—Lesson No. 1.—Instructions.
- Canning—Lesson No. 21.—Fireless Cooker.

FEBRUARY.

- Pig—Circular No. 3.—Forage Crops.
- Corn—Circular No. 3.—Good Seed.
- Cotton—Circular No. 1.—Preparation of Seed Bed.
- Potato—Circular No. 2.—Selecting Seed and Planting.
- Canning—Lesson No. 2.—Starting the Plants; Making Hotbeds—Cold Frames.
- Poultry—Lesson No. 2.—Variety of Chickens; Nests.
- Canning—Lesson No. 28.—Use of Dried Fruits. (Make apple whip.)

MARCH.

- Pig—Circular No. 4.—How to Make the Pig Grow.
- Corn—Circular No. 4.—Planting.
- Potato—Circular No. 3.—Cultivation.
- Calf—Circular No. 2.—Pastures.
- Sheep—Circular No. 2.—Feeding the Ewe and Lamb.
- Cotton—Circular No. 2.—Testing Seed and Planting.

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Canning—Lesson No. 3.—Transplanting Tomatoes.
Poultry—Lesson No. 3.—Chicken Houses and Coops.
Canning—Lesson No. 28.—Making Bread.
Inspection of Record Books.

APRIL.

Corn—Circular No. 5.—Cultivation.
Pig—Circular No. 5.—Pastures.
Potato—Circular No. 3.—Saving Seed for Fall Crop.
Peanut—Circular No. 1.—Preparation of Soil.
Canning—Lesson No. 4.—Staking, Pruning, Cultivation.
Poultry—Lesson No. 4.—Feeds for Young Chicks.
Canning—Lesson No. 30.—Yeast Bread—Scoring.
Inspection of Record Books.

MAY.

Corn—Review Previous Lessons.
Cotton—Circular No. 4.—Rules for Cotton Growing.
Peanut—Circular No. 2.—Cultivation.
Pig—Review previous lessons.
Canning—Lesson No. 5.—Insects of Tomatoes.
Canning—Lesson No. 6.—Diseases of Tomatoes.
Canning—Lesson No. 7.—Other Vegetables for Garden.
Canning—Lesson No. 8.—How to Make a Home-made Canner.
Poultry—Lesson No. 5.—Lice and Mites.
Poultry—Lesson No. 9.—Poultry Products.
Inspection of Record Books.

JUNE.

Canning—Lesson No. 9.—Preparation for Canning in Tin.
Canning—Lesson No. 10.—Steps Taken in Canning.
Canning—Lesson No. 11.—Canning.
Canning—Lesson No. 12.—Brining and Seasoning.
Canning—Lesson No. 13.—Canning in Glass.
Poultry—Lesson No. 6.—Summer Diseases of Chicks.
Poultry—Lesson No. 9.—Egg Salads and Sandwiches.

JULY.

Canning—Same Lessons as for June.
Canning—Lesson No. 14.—Preserving.
Canning—Lesson No. 15.—Recipes, Figs, Marmalades, etc.
Canning—Lesson No. 16.—Recipes, Pickles.
Canning—Lesson No. 17.—Recipes, Pickles.
Canning—Lesson No. 26.—Milk, Soups, etc.

AUGUST.

Canning—Lesson No. 18.—Drying—Making the Drier.
Canning—Lesson No. 19.—Dried Vegetables and Fruits.

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Canning—Lesson No. 20.—Storing Dried Fruits and Vegetables.

Canning—Lesson No. 13.—Canning Peppers.

SEPTEMBER.

Corn—Circular No. 6.—Field Selection.

Pig—Circular No. 7.—Score Card.

Pig—Circular No. 8.—How to Make a Crate.

Sheep—Circular No. 4.—Management of Ewe in Fall and Winter.

Wheat—Circular No. 1.—Selecting Soil and Fertilizing.

Wheat—Circular No. 2.—Planting.

Peanut—Circular No. 2.—Harvesting, Curing, and Staking.

Poultry—Lesson No. 7.—Fall Colds and Roup.

Canning—Lessons No. 24 and 25.—Meat Substitutes.

Canning—Lesson No. 27.—Sauces.

Canning—Lesson No. 22.—Fall and Winter Gardens.

Completing Record Books, all Clubs.

OCTOBER.

Corn—Circular No. 7.—Cover Crops.

Corn—Circular No. 8.—Making Exhibits.

Corn—Circular No. 1.—Selecting the Acre.

Corn—Circular No. 2.—Preparation of Seed Bed.

Pig—Circular No. 8.—Preparing Pig for Exhibit.

Potato—Circular No. 5.—Selecting and Judging Exhibits.

Calf—Circular No. 1.—Selecting the Calf.

Calf—Circular No. 2.—Pastures for Calf.

Canning—Lesson No. 31.—Using Stored Vegetables.

NOVEMBER.

Pig—Circular No. 10.—Producing Strong Pigs.

Sheep—Circular No. 1.—Selecting the Ewe or Lamb.

Calf—Circular No. 3.—Grain Ration for Calf.

Sheep—Circular No. 3.—Feeding the Ewe or Lamb.

Canning—Lesson No. 23.—Peanut Butter.

Canning—Lesson No. 27.—Hot Cocoa.

DECEMBER.

Pig—Circular No. 11.—Sow and Litter.

Corn—Circular No. 8.—Judging Corn by Score Card.

Calf—Circular No. 4.—Management.

Canning—Lesson No. 29.—Poultry Products (Christmas dishes).

Canning—Lesson No. 23.—Peanut Cookies.

CORRELATION OF CLUB LESSONS WITH REGULAR STUDIES.

While the matter of correlating the club lessons with the common school studies, such as language, arithmetic, etc., is one that will necessarily have to be left largely to the initiative of the individual teacher, yet possibly a few suggestions may be of help to some one, especially those who may not have attempted this phase of the work before, for, as stated in the introduction, it is hoped that this Manual may prove a help to the teacher in vitalizing not only the teaching of agricultural subjects but all school subjects. It seems evident that the teacher who is able to teach, as it were, agriculture in every subject that he teaches will be the one who is rendering the maximum service to his pupils and at the same time will be reaping for himself the greatest enjoyment in the work for, really and truly, he will be teaching in terms of the child's own daily life.

Mention will be made here of only those common school branches with which the club lessons may be most easily correlated.

SPELLING.

Select a list of words from the lesson sheets for different phases of club work occasionally for the lesson in spelling, words used on the farm, in the home, and in the garden in the growing of corn, pigs, tomatoes, etc. As the season advances, different words in connection with the same club activities may be used. Have pupils select from their lesson sheets words that are difficult to spell.

READING.

Possibly the lesson sheets can occasionally be substituted for the regular reader. The idea in using the lesson sheets for reading lessons being to determine the pupil's ability to properly interpret the instructions. If the school has a supply of bulletins that pertain to the work which the boys and girls are doing, reading lessons may be given from such bulletins. If farm magazines are among the list of literature in the school library, reading lessons might also be taken from them.

LANGUAGE.

Any one who has gone through the common schools as a pupil or who has taught in same, knows how laborious composition work appears to the average pupil. This is because the pupil has nothing to write about that is concrete. The club work furnishes an abundance of excellent material for composition work. For instance, how to start tomato plants in hotbeds or boxes; how they are caring for their chickens; how they have

prepared their seed beds for corn, cotton, potatoes; how to build a fireless cooker and use it; how they are managing their pig, calf, or sheep; how they conduct their regular club meetings; how to write up the minutes of meetings; how they have profited from the club work, and many other suitable topics about the things that the boys and girls are actually doing. The writing of these compositions will bring into use common, everyday terms and phrases the boys and girls should know how to use and spell correctly. It affords a lesson in spelling, punctuation, etc., and, instead of composition work being the most dreaded part of the language study, it should become the most interesting, because boys and girls will be glad to tell how they are doing things that are profitable and worth while.

ARITHMETIC.

No subject finds more daily application in club work than Arithmetic. Problems may be taken from the following:

- (1) Measurement of the acre and ten-acre plots that may have different shapes.
- (2) Finding the number of tomato plants on one-tenth acre. Number of stalks of corn on one acre at different distances.
- (3) Finding the loss sustained from imperfect stands.
- (4) Ascertaining the cost of fertilizer and barnyard manure at different amounts per acre.
- (5) Ascertaining the cost of production of corn per bushel. Pork per pound.
- (6) Cost of making home-made canners, fireless cookers, seed box testers, hog houses, chicken houses, etc.
- (7) Amount and value of plant food removed from soil by corn, cotton, etc., of any yield.
- (8) Cost of preparing pasture for pig, calf, sheep.
- (9) Losses sustained from diseases and insects of plants and animals and cost of preventing same.

Numerous problems can be made from the above and many other similar topics, by having the club members from the different clubs give the information that applies to his or her particular club. The chief value in the correlation with Arithmetic is that it brings up for solution those problems that confront the boys and girls in their everyday life, the really practical and useful problems.

Is it not worth more to a farmer boy to know how to determine the amount and value of plant food removed from soil by a 40-bushel yield of corn and how to replace that than it is to extract the cube root or even square root of a long row of figures?

Is it not worth more to a girl to know the kind of feed to give her chickens so that they will lay the year round, and how

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to prepare the eggs for the table, than it is to locate all the bays, gulfs, and sounds bounding a certain division of land?

GEOGRAPHY.

(1) Have pupils draw maps showing corn-producing States and then tell why. Compare the average yield of such States with that of Arkansas. With that of the Corn Club members. (See Year Book, or write for information.)

(2) Have maps prepared showing hog-producing States, and compare those States with Arkansas.

(3) Have the same kind of maps prepared for sheep and cattle.

(4) Maps showing those States that grow the most tomatoes, and why.

(5) Draw maps of Arkansas showing the scope of club work. How does your county compare with other counties?

(6) Draw map of your own community, your own farm, showing arrangement of houses.

(7) Draw a model farm showing conveniently arranged buildings.

(8) Draw diagram of pig pastures, chicken yards, etc.

(9) Draw corn plant showing root-growth and development.

(10) Draw tomato plant.

Note to Teachers.—As to just how and when the club lessons in this Manual are to be taught is largely up to the teachers. This Manual, however, is prepared for those teachers who take sufficient interest in the Boys' and Girls' Club Work to have a large enough enrollment of members in the various clubs so that they may give separate lessons on Club Work once a week or once every two weeks, or as often as they see fit, just the same as they would give a lesson in Arithmetic, Geography, or any other subject.

INSTRUCTIONS FOR CLUB MEMBERS.

BOYS' CLUBS.

By W. J. JERNIGAN,
State Boys' and Girls' Club Agent.

CORN.

Circular No. 1.—Corn.

SELECTING AND FERTILIZING THE ACRE.

Corn Club members in selecting their plot for their corn should keep in mind these points:

Location.—It is best to have an acre joining another field of corn of the same variety rather than having it located to itself possibly near a strip of woods where it is liable to attack from stock breaking in, from squirrels, and from crows, etc. It matters not about the shape of the plot just so it contains exactly 4,840 square yards, or 43,560 square feet.

Drainage.—There should be no part of the acre upon which water stands for any considerable length of time after a rain. Standing water excludes the air from the soil, makes the soil sour, renders the plant food useless and puts the soil in bad physical condition. All lands inclined to wash should be terraced to prevent the loss of plant food and the washing away of the seed.

Uniformity.—The soil over the whole acre should be as nearly alike as possible. That is, you should not have land a part of which is sandy and part clay. Such a field cannot be cultivated to good advantage because the sandy soil could be cultivated almost immediately after a rain but the clay must be allowed to dry out, so if both kinds were in the field you would either have to cultivate the clay when it is too wet or else let the sandy soil get too dry.

Fertile Soil.—Corn requires a fertile, loamy soil, and if the plot selected is not of such character of soil, and many of them will not be, steps should be taken to make the soil as fertile as possible; hence the recommendations for the use of barnyard manure.

Barnyard Manure.—Barnyard manure is valuable because it contains three of the main elements of plant food, nitrogen, phosphoric acid, and potash. As a rule a ton of manure will contain 10 pounds of nitrogen, 5 pounds of phosphoric acid, and 10 pounds of potash, which, if purchased in the form of commercial fertilizer will cost about \$2.85. Barnyard manure is valuable because it contains humus, and as a rule a ton of barnyard manure will contain about 500 pounds of humus. Humus is sim-

ply decayed vegetable matter and gives life to the soil. It makes heavy soils more open and binds sandy soil more closely together, enabling both to hold a larger amount of moisture. From 10 to 20 tons per acre of well-rotted manure may safely be applied, about 10 tons on sandy soils and a larger amount on heavy clay soils. The manure should be evenly distributed over the acre and worked well into the soil.

Commercial Fertilizers.—If no barnyard manure can be secured, commercial fertilizer may be substituted, the following kinds and amounts being recommended: For soils of medium fertility, use 200 pounds of cotton seed meal and 200 pounds of acid phosphate. For very thin soils, use 250 pounds of cotton seed meal and 150 pounds of acid phosphate; for bottom land soil, use 150 pounds of cotton seed meal and 250 pounds of acid phosphate.

QUESTIONS.

1. Why is it a bad policy to have fields of different varieties of corn located near each other?
2. How does poorly drained land affect the yield of corn? How remedy it? How may rolling lands be prevented from washing? Have you lands that are wet or that wash?
3. Why is it necessary to have the entire field of corn of the same type of soil?
4. What kind of soil produces the best yield of corn?
5. What is the value of barnyard manure?
6. What advantages has it over commercial fertilizer? Which do you use?

Circular No. 2.—Corn.

PREPARATION OF SEED BED.

The preparation of the seed bed for most soils should be begun in the fall or winter by breaking the land to a depth of 8 to 10 inches. Sandy soils, however, should not be broken in the fall unless a cover crop is sown, and it is advised that a cover crop be sown on other soils as well as on sandy soils.

Fall or winter breaking has these advantages:

- (1) It is done at that time of the year when work is not rushing.
- (2) The snows and winter rains will be absorbed to a greater depth instead of standing on the soil or washing the soil away. A larger amount of moisture is thus stored up for spring and summer use.
- (3) Fall broken land can be worked earlier in the spring because the surface will be drier.
- (4) Fall breaking is one of the best methods of combating corn insects, as it destroys their places of hibernation.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Fall broken land should be thoroughly disked and harrowed before planting.

Land broken in the spring should not be at as great a depth as land broken in the fall.

All spring plowed land should be harrowed the same day it is broken and if too dry, it should be harrowed both noon and night.

Land should never be plowed when too wet to pulverize.

If the land is not broken before spring, it is better to disk the land well before breaking in order to pulverize the furrow slice before it is out of reach of the harrow. Disking before breaking also keeps the land in good plowing condition longer and helps to retain a greater supply of moisture.

A deep seed bed well supplied with moisture and well drained makes a big corn yield possible whether the summer proves too dry or too wet.

No amount of cultivation after planting can make up for the lack of proper preparation.

A properly prepared seed bed has these advantages:

- (1) It hastens germination of seed.
- (2) It insures a more perfect stand.
- (3) Permits early cultivation after rains.
- (4) Provides more moisture in times of drouth.
- (5) Makes following cultivations easy.
- (6) Furnishes more food for the plants.



A Demonstration in Seed Bed Preparation by County Agent and Corn Club Boys.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

QUESTIONS.

1. What are the advantages of fall or winter breaking? Should all lands be broken in the fall or winter?
2. Should land be broken as deep in the spring as in the winter? Why?
3. Why harrow land the same day it is broken in the spring? Why not plow land when wet?
4. What is the advantage of disking land before breaking?
5. What are the advantages of a well-prepared seed bed?
6. How do you prepare your seed bed for corn? How do the farmers of your community prepare their seed bed for corn?
7. Has it been your experience that it pays to have a well-prepared seed bed?

Circular No. 3.—Corn.

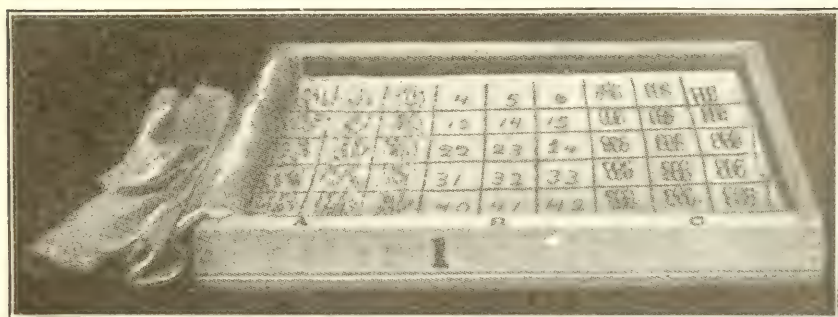
GOOD SEED.

There is no one factor that has more to do with the making of good yields of corn than the seed you plant. It matters not how rich your soil may naturally be or how rich you may make it by the application of barnyard manure or commercial fertilizer, or how thoroughly you may prepare your seed bed unless you have perfectly sound, well-matured seed, adapted to your own climate and soils, you cannot expect big yields.

Poor seed means a poor stand; a poor stand means a small yield; a small yield means no profit; hence labor lost, or bad business. Everybody who has had experience in corn growing has also had experience in "replanting" corn. There's a reason for this having to replant and in nearly every case the reason is "poor seed." But you didn't know the seed was poor until you had planted and then it was too late. So every corn grower should use the utmost care in selecting his seed corn and in testing it for germination before planting.

How to Test.—A simple method of testing seed corn is to take a box about the size of an ordinary cracker box, and cut it down to a depth of 4 inches; pack this full of sand or sawdust and divide it up into squares of about $2\frac{1}{2}$ or 3 inches each way by means of a twine string running each way and fastened to small nails in the edge of the box. This forms a sort of checkerboard arrangement.

Each square should be numbered from 1 up; each ear of corn should be numbered to correspond with the square. Six kernels should be taken from each ear, two near the butt of the ear, two near the middle, and two near the tip, from different rows. Place these in the squares, the germ side up, and cover with a damp cloth and place in a room with a temperature between 50 and 60 degrees. Keep there for six or seven days. The



Test, Don't Guess—A Good Way.

cloth should be kept moist but not wet. The germination test then may be read.

Those ears that do not show strong germination should be discarded. For instance, if two of the six kernels of any particular ear do not show strong germination, I would discard that ear. Get perfect germination and that will mean a perfect stand. A perfect stand of corn, with other conditions being right, means large yields and large yields mean more profit.

Now as to what variety you should grow: The Experiment Station at Fayetteville informs us as follows:

For North and Northwest Arkansas the following varieties have proven good: White Wonder, Golden Beauty, Boone County White, and St. Charles White for soils of ordinary to good fertility; Johnson County White and Hildreth Yellow Dent for soils good to high fertility; Surcropper for soil medium to light fertility; Southern Beauty for soils of ordinary fertility; Mosby's Prolific for soils of ordinary to high fertility; Roberts' Red Cob for soils of high fertility.

For East Central and South Arkansas the following varieties are recommended: White Wonder, Boone County White, St. Charles White for ordinary to good conditions, particularly in Northeast Arkansas; Johnson County White and Hildreth Yellow Dent for soils good to high fertility; Chisholm and Surcropper for soils ordinary to light fertility; Huffman for soils of high fertility; Southern Beauty for soils of ordinary fertility; Mosby's Prolific and Marlboro Prolific for soils ordinary to high fertility.

If you desire to purchase any of the above varieties, write your County Agent. He has the names of men who have them for sale.

QUESTIONS.

1. What has been your experience with poor seed? With good seed?
2. Have you ever replanted corn? Why?

3. How may you know if your seed is good? Have you ever tested your seed before planting? Do the farmers of your community test their seed before planting? Do they always have a good stand?

4. What does a poor stand of corn mean? Did you have a perfect stand on your acre? If you have only an 80 per cent stand of corn, what would be your loss in bushels if your acre could grow 6,000 stalks?

5. What variety of corn is well adapted to your locality? What kind do you use? What kind do the farmers around you use?

6. What part do you think good seed plays in the making of a big yield of corn?

Circular No. 4.—Corn.

PLANTING CORN.

Methods of Planting.—The first step to take in planting corn is to prepare a deep, well-pulverized seed bed. Good seed and proper cultivation cannot make up for the lack of a well-prepared seed bed. If the seed bed is properly prepared, the corn crop is at least half made when the corn is planted.

Corn may be planted in checks or in the drill, but the drill method is most commonly practiced, and is hereby recommended.

Whether you plant on a small ridge or the level, or in a "water furrow," depends upon the drainage of your land. If well drained, it should be planted nearly level, but if water is inclined to stand on the land, planting should be made on ridges just high enough to carry off the surplus water. If planted on land where damage is likely to occur from drouth, it is well to plant in a "water furrow," provided the rows do not run up and down the hill. As a general rule, it is recommended that corn be planted as nearly on the level as possible in order that labor saving implements may be used, and by the use of which more moisture may be retained in the soil.

Spacing of Plants.—The spacing of the rows and the distance the corn is planted in the rows must be determined by the strength of the soil. A distance of $3\frac{1}{2}$ feet apart for the rows and from 15 to 24 inches apart in the drill is recommended for bottom land. Corn planted at this distance, $3\frac{1}{2}$ by 2 feet, should contain 6,222 stalks per acre. If each stalk produces one pound of grain, which it should do, a yield of 88 bushels will be obtained. On thinner soils the rows should be about 5 feet apart, and the corn about 15 to 20 inches apart in the drill. A row of cowpeas or peanuts may be planted in between the rows about the second cultivation of corn, which may be harvested or turned under for fertilizing value.

Time of Planting.—No one can say just what date is best to

plant in any locality. Do not plant, however, until your seed bed is in good condition and the ground is warm. A safe way is to watch the best corn growers of your community and plant when they begin to plant.

Variety.—No one variety can be said to be the best. Local conditions, meaning climate and types of soil, will determine this. However, the following varieties are suggested: Surecropper, Johnson County White, Southern Beauty, Mosby's Prolific, Hastings' Prolific, St. Charles White, or any other variety, standard or native, that has proven good for your community, may be used. See recommendation in Circular No. 3.

Arranging the Planter.—See that your planter is well adjusted so that it will drop the corn regularly. Remove a few kernels from the butt and tip of the ear in order that all kernels may be nearly of the same size. Plant more than is needed, because it is better to thin your corn than to have to replant. Remember the old saying, "One for the blackbird, one for the crow, one for the cutworm, and three for to grow." Work to get a perfect stand. Know the number of stalks on your acre and help each stalk to produce at least one good ear.

QUESTIONS.

1. What method did you use in planting your corn? How do most farmers plant their corn? Does corn usually suffer from drouths in your section? To what do you think it is due?
2. At what distance did you plant your corn? How many stalks did you have on your acre? Did you have a perfect stand? About what was your loss in bushels from poor stand?
3. What is the usual date for planting corn in your community? About how long does it require for corn to mature?
4. What make of planter do you use? Do you have trouble in getting your planter to work well. Does the size of the kernels have anything to do with regular planting?

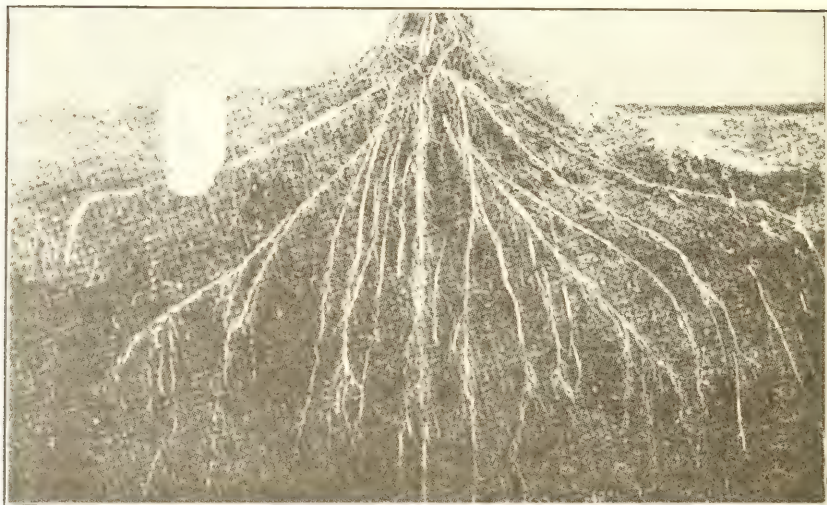
Circular No. 5.—Corn.

CULTIVATION.

By DEAN MARTIN NELSON.

The preparation of the seed bed should be done so thoroughly that cultivation after planting may be adjusted almost entirely to destroying weeds and keeping the soil fine and loose on the surface to prevent it from drying out.

Kind of Implements.—The kind of implements used after planting is important. The blades of the old-style double-shovel cultivator are too large and should be used only in case that heavy rains, following planting, have beaten down the ground very hard. Then you will have to cultivate deeper than usual for one or two cultivations, and the double shovel should be



Showing the Distribution Corn Roots.

used. Otherwise, avoid large shovels, and use a cultivator with medium or small size shovels. Begin as soon as possible after planting. The earlier the better. Cultivate close to the row. Try to cultivate every inch of the soil between rows and leave the soil on the surface as smooth as you can.

When to Cultivate.—No one can tell you exactly how many times it will be necessary to cultivate throughout the summer. Your guide will have to be to cultivate frequently enough to keep the soil loose and weeds destroyed. It is very important to cultivate promptly after heavy rains, especially if the rain has been lasting. It will not do to cultivate when the soil is wet and sticky, but it is important to cultivate the very first hour that it is dry enough, in order that the hot sun and dry winds may not form a crust on the soil and carry away, by evaporation, a lot of moisture that would be kept in the soil for the crop. During this part of the year no one can tell when a spell of drouth will come. The best protection against drouth is to cultivate promptly when the soil is dry enough after each rain.

How Late to Cultivate.—Do not stop cultivation because the corn gets as high as your head or higher. Keep on faithfully until the ears have reached considerable size. The crop needs your help most at the time, that is, in making the ear. If you will give the crop your best attention at that time, you will be far surer of making a good yield than by "laying by" earlier.

How Deep to Cultivate.—The depth to which to cultivate is very important. Some cultivate too shallow and some too deep.

Do not make these mistakes. It is safe to cultivate 2 inches deep at all times. It is unsafe to cultivate shallower than this in mid-summer. As dry weather comes on, watch very closely to see whether the surface mulch you make is keeping the soil moist under it. If not, go a little deeper, for in time of drouth success depends entirely upon the looseness of the mulch.

QUESTIONS.

1. Why do we cultivate? What will determine the kind of implement we should use? Is early cultivation necessary? Why?
2. Is frequent cultivation necessary? Why? How deep should you cultivate? How deep, how early, how late, how frequent do you cultivate your corn? How late do the farmers around you cultivate their corn?
3. How many times do the farmers usually cultivate their corn? Is it a safe rule to say that corn should be cultivated any certain number of times? What will determine the number of times corn should be cultivated?
4. At what stage of growth does corn require the most plant food? Does late cultivation assist the plant in getting food? How?
5. Is it a good practice to pull fodder?

Circular No. 6.—Corn.

FIELD SELECTION OF SEED CORN.

Just as successful breeding and improving of live stock depends more upon the selection of the individual animal than upon the breed itself, so the successful breeding and growing of corn depends more upon the selection of the individual ear and the stalk from which the ear is grown than the variety of corn. It is true that the variety, like the breed, goes a long ways, but just as any breed can be taken and bred up to a high degree of efficiency, even so any variety of corn can be taken and likewise bred up to a high point as a yielder, and it is urged that Corn Club Boys use the same care and caution in selecting the seed corn as they do in selecting their pigs and calves.

When to Select.—The proper time to select seed corn is in the fall before it is harvested, but after it is thoroughly matured. Desirable stalks, however, may be noted any time during the year and so marked as to know where to find them when the time comes to select the seed. It is very desirable to know the stalk that produces the ear just as you want to know the father or mother of a calf or pig you buy. Field selection gives one an opportunity to thus study the individual stalk.

Desirable Ears.—The size of the ear will depend upon the variety of corn grown, but if some of the larger varieties are

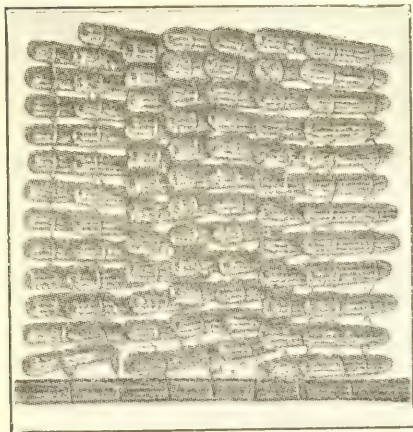


The First Step in Making Big Yields.

grown, such as Johnson County White or Reid's Yellow Dent, the ears should be around 10 inches in length, nearly cylindrical in shape, that is, not too tapering, having straight rows of sound, bright, well-matured kernels of uniform shape, size, and color. The tip of the ear should be well covered with shuck and should hang point downward in order to shed the water. The size of the cob is an important feature to consider, and its diameter should be about half that of the diameter of the entire ear or the length of two kernels placed end to end. This will give a good depth to the kernels, a still more important feature to consider.

Desirable Stalks.—A desirable stalk is one of medium height, somewhat broad at the base but tapering gradually to the top and having plenty of broad blades. It should be entirely free of smut or other diseases, and should not be so located as to have advantage over other stalks for growing or developing. It should also be free of suckers and should bear its ears about 4 feet from the ground, as ears at that height are in easy reach for gathering and are not inclined to pull the stalk down during windstorms.

Storing.—After the corn is selected, it should be shucked and stored in a dry, well-ventilated place, free from rats and mice.



A Bushel of Corn Safely and Cheaply Stored.

A very simple way is to bind the ears together with binders' twine and hang in the attic. About 12 or 15 ears are sufficient for an acre, but many times this amount should be selected for future use or sale. Let field selection of seed corn become a habit.

QUESTIONS.

1. Has field selection of seed corn any advantage over "crib" selection? Why?
2. Do you select your seed in the field? Do the farmers around you select their seed in the field?
3. What kind of stalks do you look for in selecting your corn?
4. What is a barren stalk? Have you observed barren stalks in the field? Is it wise to select from stalks that are near barren stalks?
5. What kind of ears do you look for? How do you want the ear to hang on the stalk? Why?
6. How many ears would you select for an acre? What is a good method for storing seed corn? How do you store yours?

Circular No. 7.—Corn.

SOIL IMPROVEMENT.—WINTER COVER CROPS.

IMPORTANCE OF WINTER COVER CROPS.

- (1) Prevents loss of fertility by washing and also evaporation where lands are left bare during the fall and winter.
- (2) Gives valuable grazing to stock at a time when it is most needed.
- (3) Adds humus, the great essential to the life of any soil, improves mechanical condition of soil by filling it full of vegetable matter, which helps to hold moisture in time of drouth and prevents packing in time of excessive rains.
- (4) Such crops are net gains as they feed upon the elements that would be carried from the fields by heavy washing rains.

KIND OF WINTER COVER CROPS.

The most suitable crops to plant are rye, oats, wheat, vetch, crimson clover, and bur clover. Local conditions must determine which is best in particular cases.

Rye.—Possibly rye should receive first mention, as it can be grown in almost any climate and soil, and will not winter-kill as do some of the other crops mentioned. Then, too, the period of time in which rye may be sown is very long, running from about the first of September to the first of December. Rye can be sown in cotton middles during September or October and harrowed in with one-horse harrow. One bushel per acre is recommended. If soil is adapted, one-fourth bushel of hairy vetch and three-fourths bushel of rye can be sown together.

Oats.—Where there is little danger of winter-killing, oats is sometimes preferable to rye. Oats make good growth and are preferred by stock for grazing. The oats should be sown as early in the fall as possible in order that they may get a good start before cold weather comes. One and one-half bushels per acre alone, or one bushel of oats and one-fourth bushel of vetch mixed, make a good combination. A good turf oat should be sown.

Wheat.—Wheat may be used in very much the same manner as recommended for rye or oats.

Clover and Vetches.—More precaution will have to be used with clover and vetches than with the crops above mentioned. There must be a thorough preparation of seed bed, and the seed should be inoculated. There are two ways of inoculating:

(1) By scattering soil from field where clover has been successfully grown over the ground to be inoculated for clover, or by scattering soil from ground where the English pea or garden pea has been successfully grown for vetch.

(2) Regular inoculating material may be secured for clover and vetch from the Department of Agriculture. (Ask your County Agent at once about inoculating your clover or vetch seed.) Planting should be done as soon as danger of summer killing is over. The month of September is the best time.

AMOUNT OF SEED REQUIRED PER ACRE.

Crimson Clover.—20 pounds per acre should be sown in cotton middles in the same manner as rye.

Bur Clover.—30 pounds in the bur or 15 pounds clean seed per acre. Clean bur clover seed must be inoculated. Soils from alfalfa or sweet clover fields will inoculate bur clover.

Hairy Vetch.—30 pounds per acre when sown alone, or 15 pounds when sown with oats, wheat, or rye.

QUESTIONS.

1. What is meant by a winter cover crop? What crop is usually used as such?

2. What is the advantage of winter cover crops? Did you use a cover crop on your acre? Do the farmers around you have cover crops? What kind?

3. What advantage do the clovers and vetches have over such crops as rye, oats, and wheat as a cover crop?

4. What is the chief thing added to the soil when cover crops are turned under.

5. What does humus do for the soil?

6. Do you plant peas or any other legumes in your corn? How do you dispose of the legumes?

7. Do you burn your corn stalks? Do the farmers around you burn theirs? Is it a good practice? If not, why?

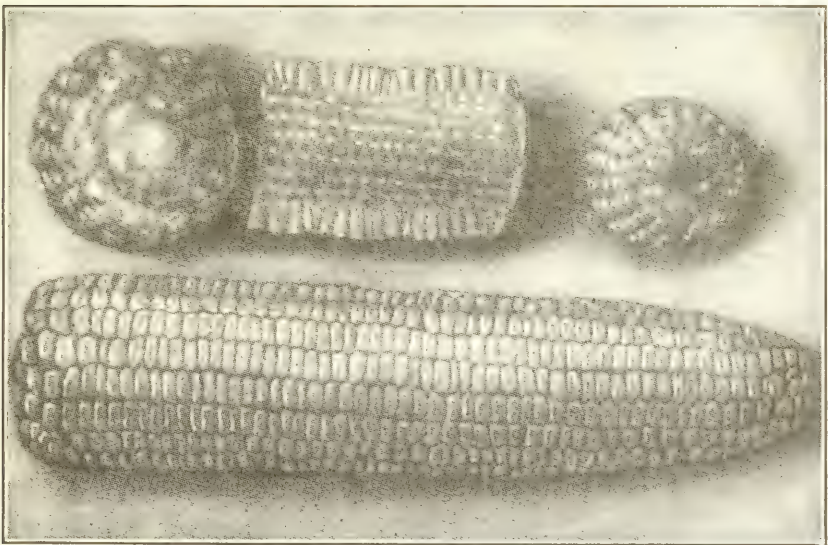
Circular No. 8.—Corn.

SELECTING EXHIBITS.—SCORE CARD.

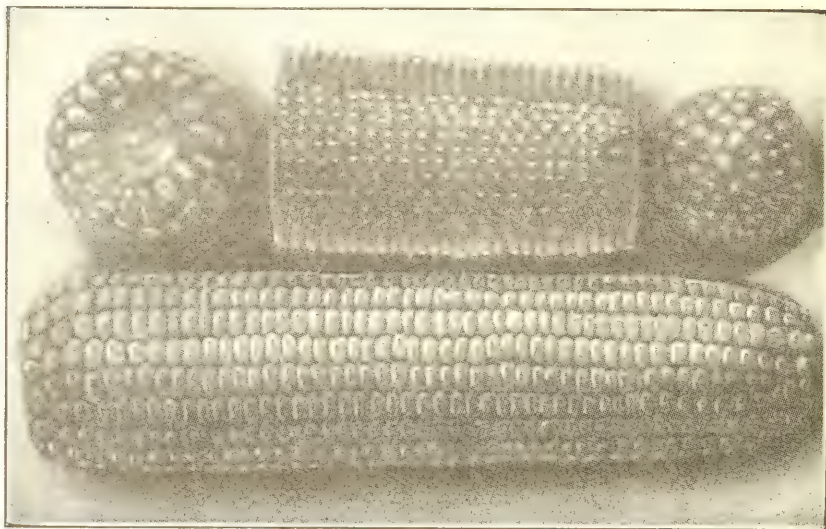
Corn Club boys are urged to select ten good ears from their acre and exhibit at their County Fair or Contest in the fall. In selecting the exhibits, the following points regarding the ear should be kept in mind:

KIND OF EARS TO SELECT.

- (1) From 9 to 11 inches in length.
- (2) With circumference at point one-third of distance from butt to tip, three-fourths of length.
- (3) With cob having diameter about one-half that of ear.
- (4) With straight rows filled with wedge-shaped kernels of the same color, six to the inch.
- (5) With well-filled tips and butts.



An Undesirable Ear. Poor Butt and Tip and Irregular Kernels.



A Desirable Ear. Good Butt, Good Tip, Good Depth and Uniformity of Kernel.

SCORE CARD FOR JUDGING CORN.

(1) Uniformity of exhibit.....	10
(2) Shape of ear.....	10
(3) Color of cob.....	5
(4) Color of kernels	5
(5) Market condition.....	10
(6) Tip of ears.....	5
(7) Butt of ears.....	5
(8) Uniformity of kernels.....	10
(9) Shape of kernels.....	5
(10) Proportion of corn on cob.....	15
(11) Space between kernels.....	10
(12) Weight of grain.....	10
Total.....	100

STANDARD WEIGHT IN GRAIN OF EARS ACCORDING TO LENGTH.

Ears 12 inches and over should weigh.....	17.0 oz.
Ears from 11 to 12 inches should weigh.....	15.0 oz.
Ears from 10 to 11 inches should weight.....	14.0 oz.
Ears from 9 to 10 inches should weigh.....	13.0 oz.
Ears from 8 to 9 inches should weigh.....	11.5 oz.
Ears from 7 to 8 inches should weigh.....	9.5 oz.
Ears from 6 to 7 inches should weigh.....	8.0 oz.



Result of One Year's Work in Corn Club in South Franklin County.

RULES FOR JUDGING EXHIBITS OF CORN.

Uniformity of Exhibit.—Ears similar in size, shape, color, and indentation. For each ear deficient in these respects, cut exhibit one point.

Shape of Ear.—Usually cylindrical but slowly tapering from butt to tip. Cut each ear one point that fails in above points.

Color of Cob.—Cobs should be red in yellow corn and white in white corn except those varieties of white corn that have red cobs. Cut one-half point for cobs off in color.

Color of Kernels.—For each kernel in yellow or red corn, cut one-half point and likewise for red or yellow kernels in white varieties.

Market Conditions.—Ripe, sound, bright, ears, firm and well matured. For each ear deficient in these respects, cut exhibit one point.

Tips of Ears.—Not too tapering, well filled with uniform kernels. Add together length of protruding cobs on tips of all ears and cut one-half point for each inch.

Butt of Ears.—Rows should extend in regular order over butt. Cut one-half point for poorly filled butts and one-fourth point for flat butts.

Kernel Uniformity.—Kernels should be uniform in shape, size, and color. Cut each ear one point failing in above points.

Kernel Shape.—Wedge shape, straight edge, large germ. Cut each ear one point failing in these points.

Space Between Kernels.—Furrows between rows should be small. Cut one-half point for space over one-sixteenth of an inch.

Proportion of Corn on Cob.—Should be 85 per cent in weight. For every per cent above 85, add one point, and for every per cent below 85, cut one point from exhibit.

Weight of Grain.—Get average length of ears, use weight of grain in above point. For each ounce below number required by ear of given length, cut one point, and for each ounce above, add one point.

QUESTIONS.

1. How many ears usually constitute an exhibit?
2. What constitutes a good exhibit?
3. What is meant by "Uniformity" of exhibit?
4. Name the points to be considered in judging corn? Give the value of each.
5. What is meant by the standard weight of ears?

Note.—Pupils should bring sample ears to school, and there judge by the score card.

Circular No. 9.—Machinery.

CARE OF FARM MACHINERY.

By V. H. KERN.

The loss due to improper care of farm machinery on the average farm is tremendous, cutting down the farmers' yearly savings, reducing the efficiency of the implements and increasing the piles of discarded tools throughout the country. Weakened parts of the implements due to rusting and rotting break when a strain is placed on them and, as a result, the repair bill is increased, to say nothing of the time lost and farm work delayed while repairs are being sent for.

Farm machinery is to be considered a necessary investment from a business standpoint. Economy means management without loss or waste, and only when the most strict economy is practiced will the highest possible dividends be obtained from the implements used on the farm. Lengthening the life and efficiency of the implement is the most practical method for increasing this dividend.

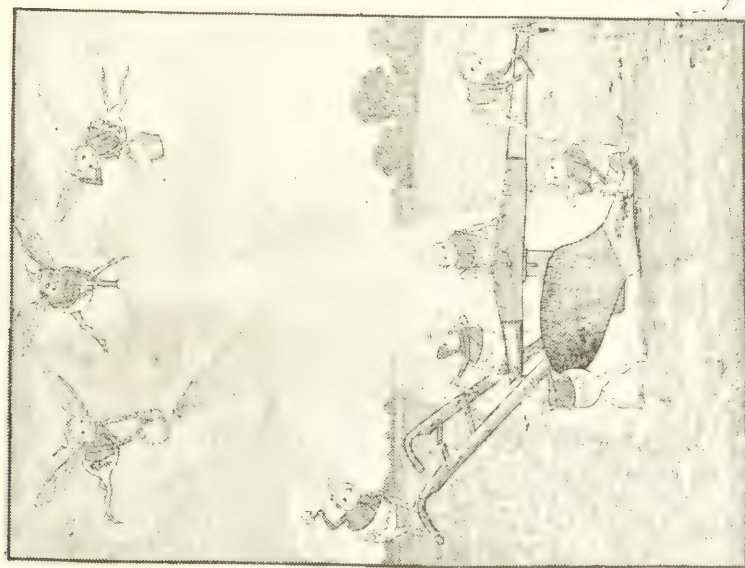
Sun, rain, and snow—these forces all combine to rust and rot machinery, and as chemical action takes place faster at higher temperatures, Arkansas' conditions are peculiarly adapted to rapid deterioration of unhoused and uncared-for implements. Since this is true, best protection can be obtained by housing, painting, and oiling each tool.

An implement shed can be built simply, cheap and durable of wood at such a cost that the farmer would be saved from four to six times the cost of the shed, and if it is kept well painted, it will last almost indefinitely. If it is impossible to house the machinery, it is especially necessary that liberal coats of paint and oil be applied at the close of the season's work.

Things You Should Do.—All working parts should be cleaned and oiled at the close of the season's work. Plow bottoms, cultivator shovels, disk harrow blades, planter and grain drill fur-



The Right Way to Care for Your Plows.



The Wrong Way to Care for Your Plows.

row openers should be painted to prevent rusting. A good combination is made by mixing axle grease and lubricating oil until a thick paint is obtained. A liberal application of this keeps moisture away from the metal wearing parts and thus prevents rusting. When paint is knocked from the wood or metal parts of the machine, it should be repainted.

In the implement shed, disk harrows, the disks of the grain drill, and the planter furrow openers should be placed on boards. During early winter all implements should be looked over for defective parts, loose or lost bolts. A few minutes devoted to repair work at this time may save many dollars the coming spring.

Keep Tools Sharpened.—It is useless to attempt to do good work with dull tools. The plow share must be sharpened properly and kept that way, and likewise the disk harrow. Sharpen the disk harrow at least once a year, or, better still, when it needs it. Sharpen the teeth of the harrow to a point. Graphite, instead of lubricating oil, may be best for the smoothing roller if it squeaks, and oiling is difficult. If commercial fertilizer is used in the grain drill, clean thoroughly when finished to prevent corroding. Keep cultivator shovels sharp. Keep the spreader repaired, keep its working parts cleaned, and do not allow too much accumulation in the winter when freezing takes place.

Proper care, housing, paint, oil, and grease are essential to long life and efficiency of farm implements.

COTTON.

Circular No. 1.—Cotton.

PREPARATION OF THE SEED BED, AND FERTILIZATION.

By W. C. LASSETTER.

If the soil is to produce good cotton, it must be well prepared. All land for cotton should be flat broken, one inch deeper than it was the year before. This should be done early in order that the ground may have from three to five weeks in which to settle and become firm. The surface of the ground should be reworked before planting with a section harrow in order to prevent a crust from forming and to destroy young weeds and grass.

"To Bed or Not to Bed."—Well-drained land should not be bedded, as a rule, but if you feel that it is necessary to bed such lands, do not throw the beds more than three or four inches high. Poorly drained lands should be bedded as high as possible with ordinary tools at hand. After the land is bedded it should be allowed to stand about two weeks before planting. Just ahead of the planter, run over the bed with a harrow in order to smooth and pulverize the tops of the beds. If planting is delayed

longer than two weeks after bedding, the harrowing should be repeated. Preparing the land early and harrowing at intervals at from seven to ten days for three or four weeks before planting will make the crop grow off faster and will make it much easier to keep free from grass and weeds.

Fertilizing the Acre.—Apply ten tons (ten good loads) of barnyard manure and 300 pounds of 16 per cent acid phosphate per acre broadcast and disk or harrow it immediately. In the event only three or five tons of manure can be secured, lay off the rows with a good large shovel plow and distribute the manure and acid phosphate in the furrow. Follow with a bull tongue and 8- or 10-inch heel sweep run in the bottom of the furrow to mix the fertilizing materials with the soil. Bed on this and allow it to settle for about two weeks before planting, as suggested above.

Commercial Fertilizers.—If barnyard manure is not available, commercial fertilizers may be substituted. For just average soils, thoroughly mix 250 pounds of cotton seed meal and 250 pounds of 16 per cent acid phosphate. Apply in the drill previous to bedding. For good soils, mix 200 pounds of cotton seed meal and 300 pounds of acid phosphate. On rich soils, apply 300 pounds of acid phosphate.

QUESTIONS.

1. Is it good practice to plant cotton on a loose seed bed?
2. What will determine whether you plant on the level or on small ridges?
3. What practice do you follow? What are your results?
4. What implements do you use in preparing your seed bed, and why?
5. What is the best kind of fertilizer for cotton? Why? What kind do you use?
6. What has been your experience with commercial fertilizer for cotton?
7. Do the farmers of your community sow cover crops in cotton middles?

Circular No. 2.—Cotton.

TESTING SEED AND PLANTING.

By W. C. LASSETTER.

For the germination test, use two old plates and a piece of absorbent cloth, such as an old towel or strip of cloth torn from an old worn bed sheet. Go to the seed pile, take a few seed from the bottom of the pile, a few from the central part, and some from the top, mix these samples thoroughly and count out from that mixture one hundred seed, taking them just as you come to them. Place one end of the cloth over one of the plates, wet it

down and scatter the hundred seed over it. Press the seed down so that every one will touch the cloth, then turn the other end of the cloth over this, wet it and press it down so that it touches every seed on the plate. Wet the cloth and seed well, but do not leave enough moisture so that the water will run off the plate when it is tipped up. Turn the other plate bottom-side up over this and put the test in a warm place for about eight or ten days.

If the weather should turn cool, it would be well to place this tester in the corner of the kitchen near the stove in order that the seed may not get too cold at night. Examine every day and add enough water to keep the cloth soaked. After eight or ten days the seed will have sprouted, and when the majority of them have produced sprouts from 2 to 2½ inches long, they will then be ready to count. Count the number of seed having good long sprouts. If as many as ninety out of the hundred seed have good long sprouts, you may know that the seed will do for planting purposes. If between seventy and ninety have strong sprouts, it would be safer to increase the rate of planting. If fewer than seventy seed have strong sprouts, do not use those seed for planting purposes.

Methods and Rate of Seeding.—Cotton rows should be from three to four feet apart—wider on rich bottom land than on poor upland. Unless the soil is sandy or well drained, it is safer to plant cotton on low beds rather than level. The use of a planter which covers the seed one to two and a half inches deep is cheaper and better than hand planting. If the beds have not been made long enough for them to have settled, a planter with a roller attachment will generally give best results. Two or three pecks of selected seed should be used on each acre if they are dropped in hill, but if drilled, three to five pecks per acre is safer. More seed is needed on poorly drained or heavy soils than on well-drained, light soils.

Time to Plant.—Cotton requires warm weather for rapid growth. It is not safe to plant it until 15 or 20 days after the average date of the last killing frost in the locality. The safest plan is to plant when the successful planters of the community begin to plant.

QUESTIONS.

1. How would you test cotton seed for germination? Have you ever tested?
2. How much cotton is commonly required per acre?
3. What method do you use in seeding? Do you get good stands?
4. Does it pay to plant early? Why?
5. What variety of cotton is usually planted in your community?

Circular No. 3.—Cotton.

CULTIVATION.

By W. E. AYRES.

The First Cultivation.—The first cultivation should be given soon after planting. A section harrow or weeder should be run diagonally across the rows just before the plants are up. If the land is stumpy or otherwise rough, a V-Harrow with the front tooth removed may be run along the row instead of using the section harrow or weeder. The harrow or weeder should be used again in the same way as mentioned above just after the plants are up and green. A few days after the second harrowing, the rows should be cultivated with the side harrow attachment of a two-horse cultivator, a spring tooth harrow, or with a small sweep or other small plow on an ordinary stock. A fender is desirable with either of the above implements. The object of these early operations is to conserve moisture and kill grass and weeds before the cotton is thinned and thus avoid expensive hoeing.

Thinning.—As soon as the grass, covered in the above operation, has died, the cotton should be thinned to a stand, consisting of 10 to 12 thousand plants per acre. One plant every 12 to 16 inches, or two plants every 20 or 30 inches in the drill is about right.

Cultivating After Thinning.—Immediately after thinning—or in fair weather—as soon as the grass which was removed during the thinning operation has died—soil should be thrown around the remaining plants to support them and protect their roots from the sun. This may be done with the same implements as recommended for the first operation after harrowing. However, if the soil is heavy and has been packed by heavy rains after planting, it may be desirable at this time to cultivate deeper with small shovels on a cultivator or ordinary stock, using a fender in either case so as to prevent covering the plants. All later cultivation should be shallow. Two-horse cultivators with small shovels, sweeps or spring tooth attachments; spring tooth harrows; or ordinary stocks with sweeps or short shovels with heel scraper or sweeps may be used. As the plants become larger, larger cultivating plows may be used. After the cotton is too large for the use of two-horse cultivators, a short shovel or scooter and a large heel sweep or scraper may be used on the ordinary stock.

How Often to Cultivate.—Cultivate as soon as the soil is dry enough after each rain, and often enough in dry weather to keep down weeds and grass and to preserve a layer of finely pulverized soil, called a mulch, on the surface to conserve moisture. A cultivation once every seven to ten days is a very good rule.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

How Late to Cultivate.—Cotton is a plant which continues fruiting until frost, and should never be made to compete with weeds or grass for plant food or moisture. Shallow cultivation with sweeps or heel sweeps may well be continued until the first bolls open.

Hoeing.—Hoeing is expensive and should be avoided as much as possible by proper cultivation with horse-drawn implements. It is necessary to thin cotton with a hoe, but after this is done, the hoe should not be used except to remove large weeds and grass.

QUESTIONS.

1. How early should cotton be cultivated?
2. What implements would you use?
3. What advantage has the section harrow in cultivation of cotton?
4. What is your method of thinning cotton? What is the cheapest method?
5. How many times do you hoe your cotton?
6. Do you consider hoeing cotton an expensive operation?
7. How often do you cultivate? How deep? How late?
8. Are there good reasons for late cultivation? What is your experience?

Circular No. 4.—Cotton.

RULES FOR COTTON GROWING.

1. **Plow Early, Let Soil Settle.**—Flat break land one inch deeper than usual at least 30 days before planting.

2. **Make Good Seed Beds.**—Well-drained land should be planted flat. Poorly drained land should be bedded high enough to carry off the surplus water.

3. **Use Well-Drained, Warm Soil.**—It hastens germination. Insures good stand. Makes rapid growth of plants.

4. **Plant as Early as Soil is Warm.**—About 15 or 20 days after the average date of the last killing frost.

5. **Plant Early Fruiting Varieties.**—Cleveland Big Boll (Wanamaker) is early, yields well, and resists disease. Mebane Triumph and Rowden yield well but are not so early and are not so resistant to disease. Trice, Kings and Simpkins are extremely early, yield well, but have small bolls, fall out badly, and are very susceptible to diseases.

6. **Use Plenty of Seed.**—From three to five pecks on well drained soil. From six to eight pecks on poorly drained soil.

7. **Do Not Thin Too Much.**—Leave from 12 to 16 inches in the drill.

8. **Harrow Before and After Cotton Is Up.**—Use section harrow crosswise the rows in both cases, or if the land is stumpy, use V-Harrow with front tooth removed on top of the row.

9. Cultivate Often Until August.—Cotton grows until frost. Cultivate every eight or ten days and after each rain as soon as ground is dry and continue this until late summer.

QUESTIONS.

1. Name the nine rules for cotton growing.
2. What rule or rules stand first in your opinion?
3. Did you try to follow these rules? Does it pay?

PEANUT.

Circular No. 1.—Peanut.

GROWING SPANISH PEANUTS.

(Farmers' Bulletin 431.)

Selecting and Preparing Soil.—Select a piece of well drained, sandy loam soil that is well supplied with vegetable matter and humus. If sandy loam soil is not available, use the lightest soil you have. Plow the land six or eight inches deep during the winter or early spring and put the soil in the best possible condition by discing, harrowing and dragging or rolling. Harrow the soil every ten days or two weeks up to planting time to kill the weeds. This will lessen the work of cultivation and hoeing.

Time and Methods of Planting.—Plant peanuts in the spring after all danger of frost is past and the soil has become warm. As a rule, it is safe to plant them a little later than corn or beans. Plant the Spanish peanut about six to eight inches apart in the row with about thirty inches between the rows. The seed should not be shelled but it might be better to soak them in water from 24 to 48 hours before planting, but be sure to plant immediately after soaking. They may be planted by hand or with a one-horse planter which will drop the pod at the desired distance, if the machine is properly regulated. When planting by hand, open the furrow with a small turning plow or a single shovel plow, and after dropping the seed, cover to the depth of $1\frac{1}{2}$ to 2 inches, depending upon the character of the soil. On a heavy soil, cover about $1\frac{1}{4}$ inches and on a light and sandy soil cover $1\frac{1}{2}$ to 2 inches deep. It will require $1\frac{1}{2}$ to 2 bushels of peanuts to plant an acre at the distance suggested.

Cultivation.—The cultivation of the peanut crop should begin soon after planting. A one-horse weeder or a light section harrow may be used cross-wise the rows to break up the crust and kill the small weeds before the peanuts come up. After they are large enough so the rows can be followed, a small tooth cultivator should be used. Frequent shallow cultivation should be given to keep the soil loose and to prevent the loss of moisture.

During later cultivations, it is desirable to cultivate deeper and to work the soil toward the rows to provide loose soil in

which the pods may form. After the pods begin to form, cultivation should cease except in the middle. The old idea that the blossom should be covered is an erroneous one. The pegs which later develop into pods will push their way down into the soil if plenty of loose earth is provided. As a general rule, it is best to use a light cultivator rather than turning plow or sweep. If weeds or grass become very troublesome it may be necessary to use a sweep, but, if possible, keep the soil stirred and prevent the growth of weeds. It is often necessary to use a hand hoe to keep the weeds and grass down in the row.

QUESTIONS.

1. What kind of soil is best adapted to growing peanuts?
2. Is there an advantage in having a well prepared seed bed for peanuts?
3. What methods are recommended for planting? And when?
4. What variety is used in your locality? Any special reason for this variety?
5. What kind of implements do you use in cultivating your peanuts? Why?
6. Is it necessary to cover the blossom with soil?

Circular No. 2.—Peanut.

HARVESTING PEANUTS.

(Farmers' Bulletin 431.)

Digging.—Peanuts are usually ready for digging when the vines turn yellow and the lower leaves begin to fall off, but this is not always the case. It is a good plan to pull up a few hills, over the field, and examine the pods to see if they are well-filled. There is a tendency among beginners to dig peanuts before they are mature, but this should be avoided. When the crop is dug too soon, the percentage of "pops" or unfilled pods is large and the nuts shrivel up, thus making an inferior product. A few of the early nuts will sometimes sprout long before the main portion of the crop is matured, but it is better to sacrifice those than to harvest too early.

When peanuts are grown on a small scale, they are sometimes pulled by hand, but this is not a desirable method as most all of the roots, with the nitrogen nodules, are removed. The plants should be dug in such a way that a large portion of the root is left in the ground. One of the simplest implements is the common turning plow with the mold board removed to prevent covering the plants. If the share is sharp and the plow is properly regulated the root can be cut off at any desired depth.

Another simple digger consists of a U-shaped bar or steel attached to a Georgia plow stock. The bar is sharpened on the

front edge and 4 to 5 iron fingers are attached to the back edge to separate the vines from the soil. This implement can be regulated to cut off the root whenever desired. Probably the best digger is the regular peanut digger which is made on the same principle as the potato digger. The potato digger is satisfactory if the seat bars are made longer and placed farther apart so as to allow the vines to pass over the elevator without clogging. By means of a lever attached to the digging point, the machine can be regulated so as to run any depth desired.

Curing and Stacking.—After the peanuts are dug, they should be left lying on the ground for a few hours or just long enough to wilt. This will ordinarily require from 2 to 6 hours, depending upon the weather conditions. When the vines have wilted they are shaken from the soil and taken up by hand or a fork and piled in a circle around the stacking pole. This circle should be large enough to allow the stacker plenty of room to work. The poles used should be about 7 feet long and large enough to support a small stack. Set the poles between the peanut rows and bring up 5 or 6 rows of peanuts to each stack row. Put the poles in the ground about 15 to 18 inches deep and nail on two crosspieces 8 to 10 inches from the ground. These pieces may be any scraps of lumber 12 to 18 inches in length. Start the stack by dividing a few bunches of peanuts and hanging them over the ends of the crosspieces. This keeps the nuts off the ground and the stack high in the middle, insuring drainage off of the water. The vines are stacked with the nuts to the pole so as to prevent weathering of the pods and injury by birds. Near the top of the pole the stack is drawn to a point and capped with a bunch of grass or weeds.

In some sections the vines are allowed to cure on the ground and then raked up into piles and stacked in much the same way as cowpea hay is cured. This is bad practice because the nuts dry out too quickly, causing them to shrivel, and those on the outside of the stack turn black. For a first-class product the nuts must cure slowly and without exposure to the weather. Stacking by hand, as described, is the best method and should be followed when the nuts are intended for market.

Saving Seed Peanuts.—It is a good plan to select the seed for the next season's planting at the time the peanuts are dug. Select vines with a large number of well-filled pods, clustered close around the base of the plant. A spreading plant, with pods along the branches, usually has a large percentage of "pops" or poorly filled pods. Stack the seed peanuts separately and pick off the nuts by hand to prevent cracking or breaking of the pods. Store the seed in a dry place, preferably where there is no danger of freezing.

Picking and Threshing.—The peanuts should be allowed to

stay in the stack for four or five weeks before being removed from the vines. During this period the nuts are curing slowly and without shriveling or moulding. The hay is also of more value when cured in this way. In removing peanuts from the vines three methods are employed, hand picking is still followed when a small acreage is grown, but under most conditions a machine should be used.

In Virginia a peanut picker (a machine designed especially for this purpose) is most generally used. There are several types of pickers on the market and it is a question of choice as to which one to use. As a rule the type of machine already in use in the community will have to be employed by the club members. The ordinary grain thresher, with a special cylinder for peanuts, is also used in some sections. Whatever method is used, it is important to have the nuts removed with as little breaking of the pods as possible and to have the nuts well cleaned.

After removing the nuts from the vines they should be re-cleaned if much dirt and trash is found. Place the nuts in standard peanut bags which hold about four bushels of Spanish nuts. These bags should be clean and uniform in size and shape. Store the peanuts in a dry building away from mice and rats until ready for market. Do not put the nuts on the market during the rush of the selling season as the price is usually low at that time.

QUESTIONS.

1. What is a good indication for time to harvest?
2. What method is commonly used in harvesting?
3. What is the cheapest way to harvest peanuts?
4. What is the best method for curing? Why?
5. How many ways may peanuts be used?
6. How is the peanut crop disposed of in your community?

POTATO.

Circular No. 1.—Potatoes.

KIND OF SOIL.

By J. S. KNOX.

The potato thrives on a great variety of soils, but is at its best on the well drained sandy loams. In the great potato section of the Northern United States, we find them growing to perfection in the old glacial drift soils. Such soils are usually rich in plant food and they seem especially well fitted to potato growing. In the South, however, the soil most generally planted to potatoes is the rather light sandy loams. Such soils are to be found in the Atlantic and Gulf Coast States, and every year thousands of acres of this land are used for growing early crops of potatoes for the Northern market. These sandy soils warm up and can be worked early in the spring, thus enabling us to

get our crops on the market early in the season. This is a factor of the greatest importance to the Southern truck grower.

Preparation of Soil.—Too much importance cannot be placed on the thoroughness of the preparation of the soil before planting a crop of potatoes. A crop of cowpea vines or clover turned under in the fall of the year and replowed the following spring makes an excellent field for potatoes. The decaying bodies of the plants fill the soil with organic matter and make it retentive of moisture. Before planting, the surface of the soil should be finely pulverized by the disc and acme harrow. A little extra work done in preparing the soil doubly pays for the trouble.

Fertilizers.—Few of our soils in nature contain sufficient plant food to grow a crop of potatoes every year without additional fertilizers. In the great trucking districts of the South, we find growers using from 600 to 1,200 pounds per acre of commercial fertilizers. The fertilizers vary in analysis but as a rule, contain from 3 to 4 per cent of nitrogen, 8 to 10 per cent of phosphorus and 6 to 8 per cent of potash. The price of potash at the present time is so high that the farmer cannot afford to use it unless he can find a supply of wood ashes close at hand. If stable manure is to be used, it should be applied broadcast and turned under several months in advance of the time for planting the potatoes.

QUESTIONS.

1. What type of soil is best suited for potato growing?
2. Why are the sandy loam soils of the South of such great importance for the growing of potatoes?
3. Give direction for preparing the land for a crop of potatoes.
4. Of what special value is a crop of peas or clover, when turned under for the growing of a potato crop?
5. Why is it necessary to add fertilizer to our soils for each crop grown?
6. What kind, and how much fertilizer, do you use per acre?

Circular No. 2.—Potatoes.

SELECTING THE SEED.

By J. S. KNOX.

As a rule, very little attention is given to the selection of seed potatoes in the South. This should not be the case because there are few operations in potato growing that are of greater importance. This selection had best be done in the field at the time of harvest. Select the tubers from hills that have a good number of well formed and medium sized potatoes and also from those hills which show no evidence of disease. It should be remembered that potatoes having shallow eyes are to be pre-

ferred to those having the deep eyes, or sunken places at the points where the sprouts appear. This is important because in paring the potatoes having deep eyes, it is necessary to remove so much of the flesh of the potato.

Treating Potatoes for Planting.—Before planting a crop of potatoes, it is well to give them a treatment for the control of such diseases as scab and rhizoctonia. This treatment consists in the mixing of one pint of 40 per cent formalin with 30 gallons of water then soaking the potatoes in this solution for about 1½ hours before cutting for planting. Another method of treatment is to dissolve 4 ounces of bichloride of mercury in 30 gallons of water and soak the potatoes in this for about 1½ hours before planting. As a precaution against infection it is well to treat the seed, whether or not diseases can be seen on the tubers.

Planting.—Before beginning the planting, see that the surface of the ground is loose and mellow, then lay off the rows about three feet apart and drop the pieces of potato at intervals of 12 to 15 inches in the row. If you step on each potato it will bring it into direct contact with the soil and thus cause it to germinate more quickly. When the potatoes are dropped in the row, they should be covered as soon as possible to prevent the drying of the soil about them. It is not necessary to cover more than two or three inches for the early crop. The date for planting the early crop may be said to extend from the latter part of February to the middle of April.

QUESTIONS.

1. Give directions for selecting seed potatoes in the field.
2. Why is it important to select the potatoes with shallow eyes rather than those with deep eyes?
3. Give directions for treating seed potatoes for planting purposes.
4. What is the advantage of seed treatment before planting.
5. Name the diseases that are most commonly found on seed potatoes in your section.
6. Give directions for planting a crop of potatoes.
7. What date do you generally plant the crop in your section?

Circular No. 3.—Potatoes.

CULTIVATION.

By J. S. KNOX.

As soon as the potato plants appear above the ground, the cultivation should begin, or in case a heavy rain should fall and cause a crust to form before the plants are up, a light harrow should be run over the rows to break the crust. Deep cultivation for potatoes is not to be recommended because of the damage

it may do to the young potatoes. A light harrow that pulverizes the soil thoroughly to a depth of two or three inches should be used frequently, say at ten-day intervals and as early as possible after each rain. Do not do the cultivating when the plants are wet with dew or rain because this is likely to cause trouble with diseases. Keep all weeds out of the row by hand methods.

Insects.—About the only insects causing trouble with potatoes are the potato beetle. These insects feed upon the foliage of the plants and in severe cases, all of the foliage may be destroyed.

The adult potato beetle is a small balloon shaped insect with black and white or yellowish stripes running lengthwise the body of the insect. The larva of the insect is a similar shaped insect but of a light red color. The head of the young insect is nearly black. Both of the above insects can be controlled by the use of arsenate of lead or paris green mixed with flour or air slacked lime in proportions of 1 part arsenate of lead to 4 parts of lime or 1 teaspoonful of paris green to each pint of lime.

Diseases.—There are several diseases of potatoes that are of great importance. The scab, which is controlled by crop rotation, seed selection and disinfection, as described before, is one of the most common diseases, the early and late blight causing a dying of the leaves before the potatoes are half mature. Diseases of this nature can be controlled by thorough spraying with Bordeaux mixture at the rate of 2 pounds arsenate of lead paste to each 50 gallons of Bordeaux and this used to control the potato and flea beetle and the blight at the same time.

QUESTIONS.

1. Tell what you can about the cultivation of potatoes.
2. Why do we recommend shallow rather than deep cultivation of potatoes?
3. Name some of the most common insect enemies of the potato, and give methods of control.
4. Mention the diseases which commonly attack the potato and tell how each may be controlled.
5. Which, if either of these methods, do you use?

LATE POTATOES.

For the average farmer, the late crop of potatoes is of greater importance than the early crop because the late crop can be kept over winter and used until the early crop comes on. It is also the late crop which we use for seed in planting the early crop.

The cultivation, spraying, etc., of this crop is the same as for the early crop, but the planting should be a little deeper

for the late crop because of the lack of moisture in the surface of the soil at that time of the year.

It is also advisable to sprout the late potatoes before planting because this insures a better stand of potatoes. To sprout the potatoes, select a place in partial shade, spread the potatoes out in a thin layer, barely cover with soil, then over this put a layer of leaves or straw thick enough to shut out the light. Keep this moist until the sprouts are about $\frac{1}{4}$ -inch long, then take up and plant at once.

Circular No. 4.—Potatoes.

SELECTING AND JUDGING POTATOES FOR EXHIBIT PURPOSES.

By J. S. KNOX.

The man who judges an exhibit of potatoes usually has a definite score card with the different points to be considered, each point to be given a weight in proportion to its importance. Opinions differ as to what these weights should be, but possibly the following would be found suitable for most cases:

SCORE CARD FOR IRISH POTATOES.

Uniformity	20 points.
Trueness to type	15 points.
Size and color.....	15 points.
Depth of eyes.....	10 points.
Freedom from disease.....	20 points.
Freedom from injury.....	20 points.
<hr/>	
Total	100 points.

At the outset it may be said that judging is wholly a process of elimination. All of the poorer grades are at once set aside and the remaining ones scored according to the above points.

Uniformity.—One of the first points that catches the judges' eyes is that of the uniformity of the exhibit. Potatoes intended for exhibit purposes should be selected with this in view. Uniformity refers to size, shape and color of the individual potatoes in the exhibit.

Trueness to Type.—In selecting an exhibit of potatoes, be sure that you do not get the varieties mixed. The Early Rose and the Bliss Triumph both have red or pink skins, but White and Early Rose is of a flat shape, while the Triumph is more nearly round. Every potato in the exhibit for a certain variety should be of a shape characteristic of that variety. First, select a perfect specimen of the desired shape, size, color, etc., for that particular variety, then choose all others as nearly like this one as possible.

Size and Color.—Do not pick out the largest potatoes for exhibit purposes but rather the medium size specimens. This is true not only for show potatoes but also those for market or seed purposes. The color must be uniform and characteristic of that variety.

Depth of Eyes.—Other things being equal, the shallower the eyes, the higher the score on this point. The eyes should also be as few in number as possible. By examining a few specimens, you can see what is meant here.

Freedom from Disease.—Avoid all potatoes showing signs of disease. One diseased potato in a bushel may cause you to lose a prize, or in case you intend to plant the potatoes, it may be the means of getting disease scattered in your field. We cannot be too particular along this line. All diseases, no matter how serious they may be at present, at one time were confined to very few hills in the case of potato disease.

Freedom from Injury.—Be careful in the selection of your potatoes that you do not include any potatoes that are damaged, either by serious bruises or broken skins. The ideal potato in this respect is one where there cannot be seen a trace of injury. This can come only from very careful handling and selection.

QUESTIONS.

1. Name the points considered in judging an exhibit.
 2. What is meant by uniformity of an exhibit?
 3. Explain what is meant by trueness to type.
 4. What size potatoes would you select for your exhibit?
- For planting?
5. What has color to do with potatoes for exhibit or planting purposes?
 6. Would you prefer potatoes with a large number of eyes?
- With large depth of eyes?

WHEAT.

Circular No. 1.—Wheat.

SOIL REQUIREMENTS AND PREPARATION OF SEED BED.

By DEAN MARTIN NELSON.

Select well drained, productive soil, and if possible, land that is somewhat elevated. The type of soil for wheat is not a difficult requirement to meet, for it may be a heavy clay, a somewhat sandy soil, the ordinary bottom land or alluvial delta soil. When weather conditions are favorable, wheat does well on most Arkansas soils. The land must be well drained and productive.

Plowing.—Break the land at least three or four weeks before time of sowing. Early plowing prevents many of the weeds from ripening seed and gives the soil time to settle and the subsoil turned up time to weather. Many wheat growers plow in August,

in case there is no crop on the land to prevent. Plow evenly and to a good depth, at least six to eight inches.

Preparation for Seeding.—Careful preparation makes good seeding possible. The soil must be well mulched and smooth on the surface in order to do the seeding properly. Use the spike tooth harrow freely and the disc harrow if necessary to break the clods. Use the drag only for leveling the surface. Not until the surface is smooth and well pulverized is it right for seeding wheat. The practice, common in some localities, of plowing, seeding and dragging without using the harrow at all is a method unworthy of a well disposed farmer.

Fertilizers.—The grower is usually able to know when fertilizers are needed. We advise that good productive soil be selected as far as possible. Wheat, like most other crops, is not a success on poor soil. However, on many uplands and on some bottom lands, fertilizers can be used with profit. On thin uplands and crop worn bottom lands, also bottom lands naturally low in productivity, use one of the following methods:

1. Apply six to eight tons per acre of well rotted manure broadcast before seeding.
2. Apply about six tons manure per acre reinforced by 200 pounds of acid phosphate.
3. If manure is not available, apply 300 to 400 pounds per acre of a standard mixed fertilizer.

On lands of ordinary productivity, use 250 pounds of acid phosphate, or 300 pounds of a mixed fertilizer per acre. If manure is available, a moderate dressing of five or six tons should be applied. In applying fertilizer to wheat, one cannot do better than to make the application broadcast before seeding, and thoroughly mix with the soil by using the disc harrow. It is difficult to apply fertilizers on wheat in the spring and properly incorporate same with the soil without injuring the growing crop.

QUESTIONS.

1. What are the special soil requirements for wheat growing?
2. Should wheat be sown on freshly plowed land?
3. What is a good method for preparing seed beds?
4. What are recommendations for the use of commercial fertilizer for wheat?
5. What is your experience with commercial fertilizer and did it pay?
6. Does it pay to use barnyard manure? When should it be applied?

Circular No. 2.—Wheat.

SEEDING.

By DEAN MARTIN NELSON.

Time.—Location must be considered in deciding the time of seeding. If it were possible to know them in advance, weather conditions should also be taken into consideration. Because our seasons change slowly and weather conditions frequently affect the proper date of seeding, only approximate dates can be set.

North of the Boston Mountains it is advisable to seed, as a rule, from the 1st to the 15th of October. South of the Boston Mountains and throughout the central and northeastern part of the State, seed during the second half of October. In the southern part of the State, seed about the middle of November. The dates here recommended are early enough in most seasons to give the crop time to establish itself well before the arrival of severe freezing weather. It is possible in some seasons, to seed later than the dates mentioned with equally satisfactory results. In case the Hessian fly is prevalent, the seeding should be delayed from two to three weeks.

Method.—The grain drill provides the only satisfactory method of seeding winter wheat. The work of the Station shows that broadcast seeding is usually done at a loss of one or more bushels per acre. The quality of drill sown wheat is usually a shade better than a crop from seed sown broadcast. Usually drill sown wheat is able to germinate without waiting for rain. It can therefore start off promptly and evenly. It is better rooted and able to withstand any unfavorable condition better than a stand from seed sown broadcast. When grain drill is not available, an improvement upon the usual broadcast method of seeding is possible by running a disc over the soil after it is prepared for seeding, setting the disc straight, so that only shallow grooves are made. The seed can then be scattered broadcast and covered by harrowing crosswise the grooves. The larger part of the seed will be lodged and covered in the grooves made by the disc.

Rate.—The standard rate of seeding is one and one-half bushels per acre. It is unsafe to sow less than one bushel per acre. The condition of the soil and weather conditions are factors in getting a good stand. A rich, well prepared soil stimulates growth and stooling. Favorable growing weather in the fall has the same effect; however, the work of the Experiment Station indicates that to be on the safe side, one should seed at the standard rate. The fact that fair yields are often obtained from a low rate of seeding is not proof that that rate of seeding is best.

Use Clean Seed.—See that the seed is cleaned to throw out worthless grains, straw, chaff, cheat and other weed seeds. Clean

seed makes even and perfect seeding more possible for the seeding machine and usually brings a satisfactory stand. Seed should be cleaned to remove the weed seed if for no other reason. The common fanning mill of any standard seed cleaning machine will do this work satisfactorily. If possible, buy seed already cleaned.

Varieties.—The work of the Experiment Station, continuing through a period of nine years, has shown that the following varieties are generally reliable: Red May, Fulcaster, Alabama Blue Stem, Fultz. Other varieties that have done well are Kentucky Blue Stem, Sibley's New Golden, Poole, Curell's Prolific. In 1916 a comparative new variety known as Marvelous, gave relatively high yields, and also did well in 1917.

All of the above varieties are soft or medium soft winter wheat. The hard winter wheat varieties, of which Turkey Red is a representative variety, do well in an occasional season when rainfall is light during filling stage. At best, the quality of the product is not at par with the quality produced in the hard wheat producing areas, and frequently when rainfall is abundant, the quality from hard wheat strains is very low, though the yield may be well up to the average. These facts point to the better yielding of soft or medium soft varieties as the only safe type to grow in Arkansas.

QUESTIONS.

1. What is considered the best time for seeding wheat in your locality?
2. What method do you use in seeding?
3. What is recommended as the best method for seeding wheat?
4. How many bushels per acre are used for seed?
5. What is the average yield per acre of wheat in your community? County?
6. Do you have difficulty in getting a good stand?
7. What variety is recommended for your locality?
8. Does it pay to have your seed wheat cleaned?
9. How many farmers in your section clean seed before planting?

Circular No. 3.—Wheat.

INSECT PESTS AND DISEASES.

By DEAN MARTIN NELSON.

Only two serious troubles are likely to be experienced by the wheat grower. The one is the Hessian Fly, the other is Rust. The chief protection from the Hessian Fly, is, as noted above, to delay seeding for a period, two or three weeks. Fortunately the trouble from the Hessian Fly is by no means general.

Humidity or dampness combined with high temperature

usually encourage rust. It is the usual experience that wheat grown on land somewhat elevated is less troubled with rust than wheat grown on lower lands. It is therefore desirable to select, wherever possible, land somewhat elevated for wheat. If low level land is used, special attention must be given to its drainage.

Pasturing.—To be on the safe side, do not pasture at all. Never let the field be grazed closely. Never let the field be trampled hard by stock. If warm fall weather produces large growth, a calf or two grazing a little in dry weather will do no particular harm. The idea prevails with some that pasturing is beneficial. If all conditions are right, must pasturing is done at considerable risk.

Harvesting.—Wheat should be ripe but not over ripe when harvested. Quality deteriorates rapidly when wheat is allowed to stand in the field after it is ripe. It should be well shocked and covered with cap bundles immediately after cutting. It should be stacked or threshed as soon as it is dry enough. Like other lines of production, wheat growing calls for timely effort, well directed.

QUESTIONS.

1. What are some of the enemies to wheat growing?
2. Have you trouble with the Hessian Fly? How overcome it?
3. Does rust injure your wheat? How avoid it?
4. Is it good practice to pasture wheat? Do you?
5. When is the best time to harvest wheat?

PIG.

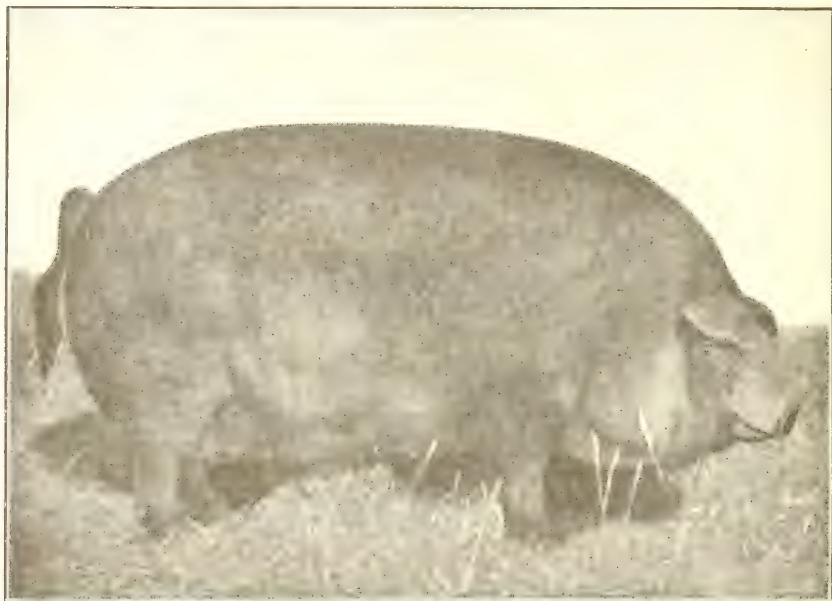
Circular No. 2.—Pig.

SELECTION OF PIGS.

By H. K. SANDERS,
State Pig Club Agent.

In selecting a pig, look for those that have straight feet with a large bone, an arched back, good width through the heart girth and breadth through the shoulders and ham. Do not select one that is too short if you are intending it for breeding purposes, but select one with moderate length, good depth of the side, a large heart girth and 10 or 12 teats.

Avoid those that have narrow chests and sway backs. Avoid, lifeless and thriftless pigs; select those with an abundance of life and energy and good, bright eyes. Also look for well curled tail and nice, smooth hair. If the hair is turned the wrong way and the tail is straight, you had better find out the trouble and remove it. A wild, vicious sow will likely kill her pigs unintentionally or by accident, and a wild animal is not easy to fat-



The Type That Wins.

ten. A sluggish lazy sow will likely kill her pigs by lying on them. Animals selected for breeding purposes should come from large litters, as "like begets like."

The pig should have a deep, broad and moderately long body, comparatively low to the ground and should stand squarely on its fore-feet. Narrow chested animals are not desirable as it means they do not have large hearts or lungs. As these are vital organs, it is necessary that they be strong.

The head should be short and broad, the neck short and thick. The shoulders broad and compact with no depressions back of them. In the Poland China breeds and the Duroc Jersey breeds, the ears should not be straight but should tip over about one third the distance from the end. The Poland China's nose should be somewhat short and straight. The Berkshire's nose should be turned up like a pug nosed dog's, and the Duroc Jersey's nose should be dished half way between that of a Berkshire and a Poland China.

A pig should be in a good, thrifty, growing condition. At the end of one month, it should weigh 18 to 22 pounds. When eight weeks old it should not weigh less than 30 pounds. Many pigs weigh as much as 40 pounds when eight weeks of age. When three months old they should weigh 60 to 75 pounds, about

120 pounds at 4 months and not less than 350 when a year old.

To produce large litters, keep your pig gaining a pound a day. Well developed gilts bring larger litters and larger pigs than stunted gilts.

Each member must be his own judge as to the breed he selects, but it is preferred that boys of any given community choose the same breed. If the breed is popular in the community, it is easy to make new selections and to sell breeding stock as well as to make the community noted for one breed.

Select pigs from prolific sows of 8 to 10 pigs per litter.

Select pigs from good quiet mothers and good milkers.

Select pigs from sows that have thick, deep, lengthy sides with 10 or 12 teats.

Keep the good old tried sows.

QUESTIONS.

1. Name the points to look for in selecting pigs?
2. If you are selecting for breeding purposes, what must you look for in the gilt?
3. Have the different breeds, such as Poland China, Duroc Jersey, different characteristics?
4. What should be the weight of pigs one month old? Two months old? Three months old? When a year old?



This Will Help Keep the Boys on the Farm.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

5. How much should a pig gain per day to be profitable?
6. Why is it important for boys in one community to select the same breed?
7. Would you select a pig from sows of large litters or small litters? Why?

Circular No. 3.—Pig.

CROP PLAN FOR GROWING FORAGE FOR YOUNG PIGS.

One-half acre. 132 feet wide by 168 feet long.

Plot I.—21 feet wide.

Plant 6 rows early corn. Cut off and feed from June 15 to July 7. Plant 7 rows peanuts about July 15.

Plot II.—21 feet wide.

Plant 6 rows early corn and cowpeas together about May 1. Cut off from July 7 to August 1. Plant 1 pound Crimson Clover about September 1.

Plot III.—42 feet wide.

Plant 12 rows field corn about April 15, in rows 36 inches apart and eighteen to 20 inches in row. Broadcast 2 pounds Crimson Clover seed about September 1. Harvest corn when ripe.

Plot IV.—21 feet wide.

Plant 7 rows cowpeas about May 1st. Cut off from August 21 to September 15. Broadcast 5 pounds oats and 1 pound hairy vetch about October 1.

Plot V.—21 feet wide.

Plant 7 rows cowpeas about June 1. Cut off from August 21 to September 15. Broadcast 5 pounds oats and 1 pound hairy vetch about October 1.

Plot VI.—21 feet wide.

Plant 8 rows Spanish Peanuts about May 15. Harvest or pasture between August 30 and September 21.

Plot VII.—21 feet wide.

Plant 8 rows Spanish peanuts about June 1. Harvest when mature.

PLANTING.

Plot 1.—Plant to Daybreak or other early variety of corn about April 15th or earlier. Plant in rows three feet six inches wide and one kernel about every 12 inches. Keep well cultivated with any shallow cultivator. Break up when the corn is cut

off and plant in peanuts as in Plot VI. Feeding from Plot I is supposed to begin about June 15th. This will be when the corn is in a green state. Green corn is an excellent hog feed. Some people do not give any additional feed when their hogs are receiving green corn. But for the best growth of the pig, it would be well to add about two pounds of middlings to every 100 pounds live weight while the pig is receiving the corn.

Plot II.—Plant to Daybreak or other early corn about May 1st, as in Plot I. In the rows with the corn, plant cowpeas about 15 inches apart in the row just as if there were no corn planted. Cultivate the two together when the crop is cut off, disk or break up the land and plant to Crimson Clover about September 1st, or as soon as the fall rains begin. Sow one pound of seed on the 1-16 acre, or at the rate of 16 pounds per acre. Broadcast the seed and harrow them in. This plot will be ready for cutting about July 7th and the same method of feeding should be followed with this plot as in Plot I. If there happens to be any corn left over from the above plot, it can be fed in connection with the cowpea or peanut crop.

Plot III.—Plant in any good variety of good field corn. Make the rows three feet six inches apart and one kernel each 18 or 20 inches. Keep well cultivated and about September 1st, broadcast two pounds of Crimson Clover seed in the standing corn and work it in with a small one-horse cultivator or harrow. Corn on this plot is to be pulled and fed in connection with the cowpeas and peanuts.

Plot IV.—Plant to Whippoorwill, Brabham, or any other good variety of cowpeas about May 1st. Make the rows three feet apart. Disk and break and plant in oats and hairy vetch between September 15th and October 15th, using one pound of vetch seed and five pounds of winter turf oats to the $\frac{1}{16}$ acre. This plot should be ready for feeding on August 1st and 21st and will last at least until September 15th. In using cowpeas, we have a feed rich in protein (muscle builder) and it becomes necessary to balance it with a feed rich in carbohydrates (fat producers) so in this case we will drop our wheat middlings and feed corn instead. Feed about two pounds of corn to every 100 pounds of live weight with the peavine forage.

Plot V.—Plant in cowpeas June 1st and handle the same as in Plot IV.

Plot VI.—Plant in Spanish peanuts about May 15. Rows should be about 30 inches apart with a plant each 12 inches. Keep out weeds with shallow plow. Will be ready for feeding August 30. With this crop we also continue to feed corn as outlined above. It will be well to gather these peanuts and store them in barn before the fall rains set in.

Plot VII.—Plant in Spanish peanuts about June 1. Make planting same as in Plot VI and handle the same way. Where a hog is to be finished off for market or home use, the grain ration should be increased to three pounds of corn to every 100 pounds of live weight per day. A hog then weighing 200 pounds would receive six pounds of grain per day in addition to the peanuts. This higher standard of feeding should be started about six or eight weeks before the hog is finished off.

PLAN FOR GROWING GREEN WINTER FEED FOR YOUR PIG.

Every Pig Club member should try to have something green to feed his or her pig all winter. It is easy to have grazing crops practically all winter if one will plan properly and begin work in time.

Select a piece of land 100 feet wide, 200 feet long as near the hogs' feeding place as possible. Manure and plow the land the same as if you were going to sow turnips, but instead of sowing turnips, plant or sow grazing crops for your pig. Divide your field into four equal parts which will make each field 50 feet by 100 feet. Then plant or sow as follows:

On Plot I plant Dwarf Essex rape in 18 inch rows in August. On rich land one pound of seed is sufficient. Rape can be grazed 60 days after planting.

On Plot II sow one half peck of rye, three pounds of Crimson Clover, and one pound of Dwarf Essex rape about September 1.

On Plot III sow one peck of oats and 4 pounds of hairy vetch about September 15.

On Plot IV sow half a bushel of Burr Clover in the burr sometime in August for the southern part of the State. In the northern and western part of the State, sow a peck of oats and one and one half pounds of red clover about September 15.

The vetch, crimson clover and red clover should be inoculated by spreading a wheelbarrow full of soil from a field that has grown the crop. If you cannot get the soil, you can get a liquid culture free of charge, by notifying the County Agent, which will inoculate the soil. He will give you a card to fill out and the culture will come from Washington, D. C. Write your County Agent or call on him in his office and ask him about sowing the above crops and where you can get the seed.

QUESTIONS.

1. What is recommended to plant in Plot I for your pig? When would you expect to begin feeding early corn from Plot I? What else should be fed the pig that is eating green corn?

2. What is planted in Plots II and III? What should be sown between the rows of corn? What should be sown in the plot after the corn is harvested early in September?

3. What is recommended to be planted in Plot IV? What should be fed the pig when it is getting plenty of cowpeas to eat?

4. What should you feed your pig while it is eating peanuts from Plot No. VI?

5. About how much corn should a pig weighing 100 pounds receive that you expect to fatten for the market when it is grazing cowpeas or peanuts?

6. Feed is essential to make a pig grow. What else must a pig have to make it grow?

7. Give the plan outlined for growing winter forage for your pig.

Circular No. 4.—Pig.

HOW TO MAKE YOUR PIG GROW.

1. **Feed It Regularly.**—Cowpeas, milk, shorts, and tankage make muscle and frame. Corn alone makes fat. Feed a variety of feed and keep him gaining a pound a day or more.

2. **Keep It in a Good Pasture.**—Exercise makes a strong pig, the lack of it a weak pig. You can buy pork cheaper at the grocery store than you can raise it if you keep your pig shut up in a small, dry pen. Provide a pasture and exercise for your pig.

3. **Give It Plenty of Fresh, Clean Water.**—Three-fourths of the weight of a pig is water. Hence, you can see the importance of plenty of fresh water for your pig. Remember that you get thirsty in hot weather.

4. **Keep Your Pig Free From Disease.**—Keep the charcoal-lime-sulphur mixture in a shallow box before your pig, as described on page 9 of Farmers' Bulletin No. 566, "Boys' Pig Clubs." This will keep your pig healthy, give it a good big bone and keep it free from worms.

5. **Keep Your Pig Free From Lice.**—There is no market for hog lice. If you are feeding lice on your pig, you are being cheated. Drive a post in the ground, wrap a gunny sack around it and saturate it with crude oil where the pig can rub against it and kill the lice.

6. **Provide Forage Crops.**—Do your best to grow something for your pig, as described in the circular sent you on "Plan for Your Pasture."

7. **Provide Plenty of Shade.**—Provide shade, but do not allow a wallow-hole for your pig.

Pigs at birth should weigh from $2\frac{1}{2}$ to $3\frac{1}{2}$ pounds; at four weeks old, they should weigh from 14 to 17 pounds, and about 35 or 40 pounds when eight weeks old; 50 to 60 pounds when nine weeks old; 60 to 75 pounds when three months old; 150 to 200 pounds when six months old; 240 to 300 pounds when nine

months old, and 325 to 400 pounds when 12 months old. Many pigs and hogs exceed these weights.

A pig weighing about 38 pounds should have about the equal of 2.2 pounds of grain a day and should make a daily gain of about .8 pounds a day. A pig averaging about 78 pounds will eat about 3.4 pounds of grain, or its equivalent, and should make a daily gain of about .8 pounds a day.

A pig weighing about 128 pounds will eat about 4.8 pounds of grain, or its equivalent, a day and should make a daily gain of about 1.1 pounds each day. A pig weighing about 178 pounds should have about 5.9 pounds of grain a day and should make a daily gain of at least 1.2 pounds.

A pig weighing about 226 pounds should get about 6.6 pounds of grain a day, or its equivalent, and should make a daily gain of at least 1.5 pounds. A pig weighing 320 pounds should get about 7.5 pounds of grain, or its equivalent, and should make a daily gain of about 1.4 pounds. Many make greater daily gains.

Endeavor to make your pig do its best. Keep it free from lice. See Farmers' Bulletin No. 566, "Boys' Pig Clubs," page 9, and read how to keep the lice away. Keep the charcoal mixture before your pig, as described in that bulletin on the same page. Keep plenty of fresh water in clean troughs in a shade for your pigs. Keep it in a good Bermuda pasture if possible. Keep account of all feeds given on a separate sheet of paper and put it in your record book when you get it.

QUESTIONS.

1. Name seven things to do to make your pig grow.
2. How many of these seven do you observe in caring for your pig?
3. Is any one of more importance than the other? Which one?
4. Pigs weighing about 40 pounds should be fed about how many pounds of grain per day?
5. Pigs weighing about 80 pounds should be fed about how much a day, and how much gain should they make per day?
6. Pigs weighing about 125 pounds should be fed how much per day and how much should they gain per day?
7. Pigs weighing around 225 pounds should be fed how much grain per day and how much should they gain per day?
8. What is the lime-charcoal mixture, and do you provide it for your pigs? Why is it recommended?

Circular No. 5.—Pig.

FEEDS AND FEEDING.

No doubt but that you have learned that plants must eat the same as we must eat and so do animals in order that they may

grow. The animal's body is three-fourths water so you see that it is absolutely necessary to keep plenty of fresh water before your pigs all the time. The rest of the pig's body is composed of mineral elements, fat and protein or lean meat.

All feed do not supply the same elements to a pig, the same as all fertilizers do not supply the same elements to the plants; hence we shall have to feed a variety of feeds in order to get a balanced ration.

The animal's body, as stated above, is three-fourths water, hence water is necessary to carry the elements in solution to all parts of the body and to aid in digestion. Fat is produced by pigs eating such starchy foods as corn, rice bran, rice polish, potatoes, artichokes, feterita, milo maize, etc. Fat is used to keep the pig's body warm, also to give it heat and energy.

Milk, shorts, tankage, cottonseed meal, soybean meal, peanuts, alfalfa, vetches, and clover are muscle builders. In other words, they make "ham what am" when fed in the right proportion. A pig will not make the best gains on corn alone because corn is a fat producer, but if it has run on an Alfalfa pasture, clover pasture or rape pasture and fed corn, it will make greater gains. One is a fat producer and the other one is a muscle builder. Whenever you feed both of them in the right proportion, the pig will do its best.

Ash or mineral matter forms bone or hair. This should be supplied by keeping a lime-charcoal mixture before your pigs all the time. You have learned that a pig needs a good strong bone in order that it might be able to carry its heavy weight when it is two or three years old. In order to make bone and supply the mineral elements, you should get a bushel of charcoal, a bushel of ashes, about 6 pounds of table salt, about 8 pounds of slacked lime, 4 pounds of sulphur and mix all together thoroughly. Then get 2 pounds of copperas and dissolve in 2 gallons of warm water and mix it with the charcoal, ash, lime and salt. Store this in a barrel under the shelter and keep some of it in shallow boxes before your pigs all the time. Perhaps you have seen a pig so fat with feet so weak it could not stand. If so, this should not have been the case. For further details, see Farmers' Bulletin No. 566, page 9.

Pigs from three to five months old when in a dry lot will do well on feeds mixed in the following proportions:

3 lbs. corn and 9 lbs. skim milk; 2 lbs. corn and 2½ lbs. short or middlings.

2 lbs. corn, 1½ lbs. shorts, and 4½ lbs. skim milk.

3½ lbs. corn, and 1/3 lb. digester tankage.

3 lbs. corn and ½ lb. peanut meal.

3 lbs. corn and ½ lb. soybean meal.

When clovers, vetches, peas, beans, etc., are fed, the quantity of shorts, skim milk, peanut meal, tankage and soybean meal may be reduced.

In balancing a ration for the pig, it is hardly necessary to take into consideration the fat and ash contents as this is usually supplied in the feed in a sufficient quantity. A pig on Alfalfa pasture, which is considered one of the richest of the muscle building feeds, will not gain much more than 1/3 or 1/4 lb. a day, but if given an ear of corn for each 100 pounds that he weighs, it will gain more than a pound a day.

To make a steam engine pull, it takes wood, water and steam.

The wood furnishes the fuel and the steam furnishes the energy, and that makes the engine go. Without either, the engine would not move at all. A pig is very much like an engine in this respect. It will grow and develop better when fed a variety of feeds.

QUESTIONS.

1. Of what is a pig's body composed?
2. Do all feeds supply all of the elements needed to make a pig grow?
3. Why is water necessary to a pig?
4. Name 7 feeds that produce fat. What is fat used for?
5. Name 8 feeds that are lean meat and muscle builders?
6. How must the fat builders and the muscle builders be fed to get the best results?
7. Why do pigs need ash or mineral matters? How can ash and mineral matter be supplied?
8. Give some rations for pigs 3 to 5 months old when fed in pens.
9. How much will a pig gain a day if allowed to run on alfalfa pasture alone? How much daily gain will it make if allowed to run on alfalfa pasture and fed a big ear of corn each day?
10. What does it take to make a steam engine go? What does it take to make a pig grow the most rapidly?

Circular No. 6.—Pig.

PASTURE FOR PIGS.

Before one can raise pigs very profitably in Arkansas, a good permanent pasture is absolutely necessary. The farmers practice two methods of raising hogs in Arkansas. One is to put them in a dry pen and feed them corn, and corn alone. The other is to turn them out on the open range and feed them no grain except a few weeks before killing time. Either one of these methods is unprofitable.

To get the best results, one needs to have a good permanent

pasture and feed grain at the same time. If your pigs are running on a good pasture alone you need not expect the best results. You need not expect the best results if your pigs are fed corn and corn alone. It is true that you can make gains by feeding grain alone, but the cost of production will be too high.

Experiments have been conducted in the South which show plainly that hogs on alfalfa pasture alone will not gain more than one-third or one-half pound a day, and alfalfa is considered one of the richest pastures for hogs. It has also been demonstrated that pork will cost 10 cents or 12 cents a pound when fed on corn alone worth \$1.00 per bushel.

A good pasture for Pig Club members to try to secure is a Bermuda pasture with bur clover, white clover, and lespedeza. The ground may be broken and Bermuda sowed and in the following fall bur clover may be sowed on the land and the next spring white clover and lespedeza.

With Bermuda as a basis, having bur clover, white clover, and lespedeza growing on it, you will have a pasture that will be green practically all the year. Bermuda grass will come on in April and furnish grazing for the pigs until the hot days of July and August cut the pasture short. In the fall of the year the bur clover will come up and furnish grazing in December, January, and February.

When the bur clover dies down, then white clover will come on and furnish grazing until the Bermuda is ready for grazing again. Lespedeza will come with the Bermuda grass and in many cases the lespedeza will try to outgrow the Bermuda grass and the Bermuda grass will try to outgrow the lespedeza.

This plan is the best that is known for the central and southern part of the State, and if you get the Bermuda started to growing, get a few pounds of bur clover seed in the hull and scatter over the Bermuda pasture sometime in September or early October. If you have a harrow handy it will be all right to harrow the seed in, but if you haven't, just scatter the seed on the Bermuda pasture and the seed will come up in the fall.

In the following spring broadcast 4 or 5 pounds per acre of white clover seed. This will come on and furnish early spring grazing until the Bermuda begins to grow in April. For the northern part of the State, orchard grass, red clover, and alfalfa should be sowed in the permanent pasture to furnish grazing all the time. Pigs need some green pasture to graze on, winter and summer, and a good pasture will cut the cost of production at least half.

After you get the Bermuda, bur clover, and white clover started to growing, you will not have to reseed it any more.

QUESTIONS.

1. What is necessary for raising pigs profitably in Arkansas? Name two methods now practiced by farmers. Are they profitable methods?
2. What method gives the best results? Will pigs do their best on pasture alone? On corn alone?
3. What is the cost of pork when made on corn alone?
4. What do pig club members try to secure for their pigs?
5. What would you sow to have a green pasture the year round?
6. What clover will grow during the winter? What clover will take its place in the spring? What will grow then when both the clovers are dead?
7. Give the plan for getting Bur and White Clover, also Bermuda and Lespedeza or wild Japan Clover growing in your pasture? What is recommended for pastures in the northern part of the State?
8. How much does a good pasture reduce the cost of production?
9. Does a permanent pasture have to be re-seeded?

Circular No. 7.—Pig.

SCORE CARD FOR HOGS OF THE LARD TYPE.

	Perfect Score.
1. General Appearance. —Weight—Score according to age, 6 months 200 lbs., 12 months 400 lbs., 2 years 800 lbs.....	6
Form —Deep, broad and long; body square in outline and squarely placed on legs well set apart.....	10
Quality —Hair silky; skin and flesh smooth, free from lumps and wrinkles; bone clean and fine.....	10
Condition —Thrifty with even covering of flesh especially on back, shoulder and loin.....	10
2. Head and Neck. —Face—Short, broad between the eyes; poll broad and full; neck short, thick and deep, rounding and full from poll to shoulder top; ears of medium size and texture; jowl broad and full.....	6
3. Fore Quarters. —Shoulders—Broad, level and compact on top; breast low and wide.....	8
Legs —Straight, clean bone; upright pastern.....	2
4. Body. —Chest and Sides—Deep, broad and full; ribs well sprung	8
Back and Loin —Broad, straight or slightly arching and evenly fleshed; free from creases. Underline of belly should be parallel with the back; flanks full, deep and nearly level....	22
5. Hind Quarters. —Hips—Same width as back, long smooth, slightly rounded from loin to base of tail.....	4

Hams—Full, deep and wide, reasonably smooth and evenly fleshed down to hock.....	12
Legs—Straight, short and set well apart, upright pasterns, feet medium size and strongly formed.....	2
Total	100

Circular No. 8.—Pig.

PREPARING YOUR PIG FOR THE FAIR.

Give your pig special attention about 30 days before the County Fair. See that it is fed and watered regularly, give it some green feed every day, then what grain you give it will do more good.

Handle your pig and have it perfectly gentle so that you can drive it well. Once or twice a week a boy should wash his pig good and keep it clean until the fair is over. It will make the hair look better and the skin will be soft and smooth.

If the toes are growing long, take an old knife and trim them off smooth like a horse's foot. Pig's feet, especially those for breeding purposes, should be trimmed as it makes them look better and keeps them from having sledge runner toes. Whether the hog is to be shown or not, its feet should never be allowed to grow long, for the toes will break off and make the pig lame.

At this time I want to call attention to the feeding of your pigs before the Fair. I find that a great number of the Pig Club members feed bulky feeds and slops without much grain. The pigs, in order to satisfy the appetite, eat so much they get paunchy, which tends considerably to count against them when they are shown at the Fair in the fall. Do not let your pig get paunchy.

Three or four weeks before you show your pig at the fair, feed less bulky slop and more grain. If your pig is on green feed begin to keep it off of the crop gradually so that when it is sent to the fair it will not miss the green feed.

Have your pig in good condition, but do not have pigs that are intended for breeding purposes overfat or they will not be good breeders.

Scrub your pig once a week with brush and soap suds to which some stock dip has been added and it will make you pig's skin clean and free of scurf. Rubbing and brushing it will make the hair smooth and glossy and the skin loose and pliable. If the hair is course and has a tendency to stand straight, you can improve this by using a little of any good, clean oil which will not discolor the hair. Do not use coal oil. You may rub the oil on the pig with a cloth, corn cob or brush.

Many of the best exhibitors trim the hair from the inside of the ear, but you must be careful or you might cut its ear.

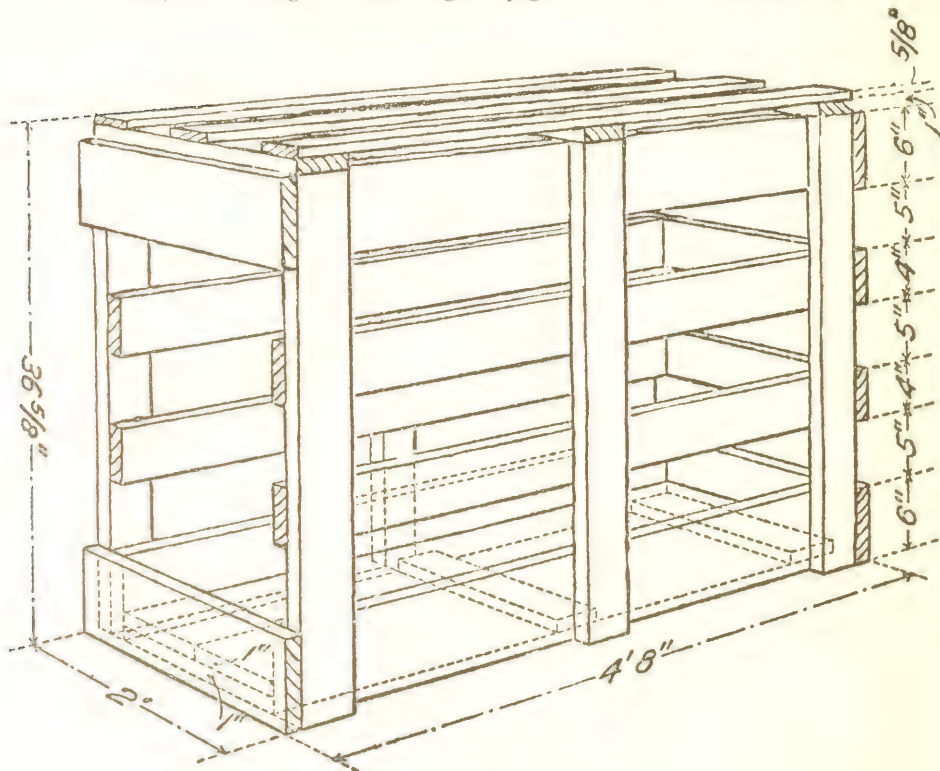
QUESTIONS.

1. What special attention should be given pigs 30 days before the Fair?
2. How should the pig be handled?
3. What should be done with long toes?
4. How should the pig be scrubbed?
5. If the hair is coarse, what may be done to it to improve its looks?
6. Should the grain ration be increased when preparing pigs for the Fair?

Circular No. 9.—Pig.

HOW TO MAKE A HOG-CRATE.

The following illustration shows a properly constructed crate for shipping a hog. A crate constructed of good light material in this manner can be used several times for shipping purposes. A trough should be securely fastened in the front of the crate, for feeding and watering the pig. The crate is 2 feet wide,



4 feet 8 inches long, and 36 $\frac{5}{8}$ inches high, by outside measurements. A smaller crate may be made for shipping a small hog.

Lumber 1 inch thick should be used in building the main framework, which includes the side uprights and top and bottom braces. The ends and floor should be made from material of the same thickness, in order to support the weight of the hog and to keep him penned more securely in the crate. Lighter lumber, preferably $\frac{5}{8}$ -inch, may be used for the top and the middle of the sides.

The following material is necessary to construct the hog-crate:

Three pieces 1 by 4 inches by 16 feet, for the side uprights, top and bottom braces, and for the two middle slats at each end.

One piece 1 by 10 inches by 10 feet, for the floor.

Three pieces $\frac{5}{8}$ by 4 inches by 12 feet, for the top and two middle slats of the sides.

Two pieces $\frac{5}{8}$ by 6 inches by 10 feet, for the sides at the top and bottom.

One piece 1 by 6 inches by 10 feet, for top and bottom of ends.

Nails.

A well-made crate lessens the danger of injury to a hog, insures his comfort, and is more easily handled than a poorly constructed one. Each Pig Club member who ships his hog to the Fair should use extreme care in building the crate in order that his pig may ship well, and that it may be handled easily at the Fair Grounds.

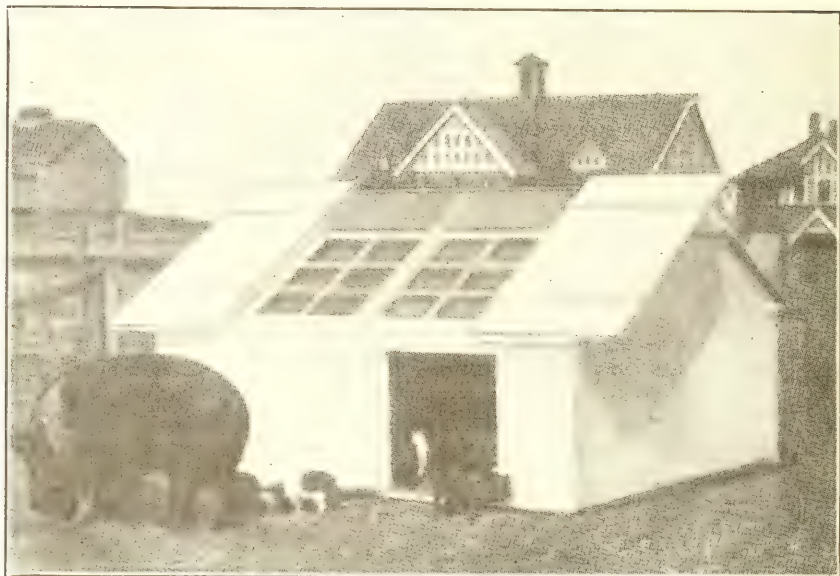
Start to make your crate early, so as to have it ready before time to ship your pig. Use 8-penny nails in constructing the crate, and see that each one is well clinched, so as to prevent injury to the pig.

Circular No. 10.—Pig.

PRODUCING AND DEVELOPING STRONG PIGS.

Good sound thrifty pigs, weighing from 35 to 40 pounds each when eight weeks old, do not come by "luck." To be lucky with pigs simply means hard, persistent work, good judgment, and being on the job night and day. To produce good strong healthy pigs, they must be looked after before they are born. The mother while pregnant must be cared for and fed properly if she is to give birth to a strong litter of pigs. As a rule the mother is neglected during the period of pregnancy, the owner seeming to think that the application of care and feed after she has farrowed is all that is required. But we should know that a poorly nourished mother means a weak, sickly litter of pigs.

The Shelter.—In the spring or summer season the sow is quite able to take care of herself. She will steal away in the



Hogs Like Warm Houses, Too. It Pays to Provide Them.

pasture and in a day of two will come up with a nice litter of pigs—from eight to a dozen. But for the sow that farrows in the winter months some protection must be given her and her litter. Nothing is better for this than a warm shed open to the south to get the sunshine. The cold winds come from the north, northeast, and northwest, hence any shed inclosed on those three sides is sufficient. To prevent the sow from crushing the pigs at farrowing time a scantling should be nailed to the inside of the house about 8 inches above the ground and projecting about 10 inches toward the center of the pen. The small pigs can run under this protection and keep the mother from lying on them. There is no necessity for building a floor in these houses; some straw at farrowing time is all that is required.

Feed For the Sow Before Farrowing.—Sows fed on corn alone will not bring strong and heavy pigs. Feed some peanuts, wheat shorts, tankage or sweet milk with the corn in the following proportion:

- Corn 3 parts and shorts 1 part.
- Corn 9 parts and tankage 1 part.
- Corn 2 parts and peanuts 1 part in hull.
- Corn 3 parts and bran 1 part.
- Corn 6 parts and cowpeas 1 part.

A 250 pound sow should have from 5 to 7 pounds per day of one of the above mixtures if she is fed in a dry lot and plenty of fresh water. The brood sow when carrying her litter has to be fed with a view of feeding the growing litter. The prospective pigs of the litter need the most proper feeding to lay the foundation for their future strength, size and constitution. One of the drains upon the sow at the time she is carrying her litter is furnishing bone making material. She therefore requires an extra amount of bone making feed. The lack of it is an injury to the litter, and a danger to the sow. Provide a trough with wood ashes, charred corn cobs, charcoal and lime. For details see page 9 Farmers' Bulletin No. 566 on Boys' Pig Clubs.

Feed For Sow After Farrowing.—The mother should not receive feed for about 24 hours after giving birth to the pigs. She is feverish though and should be liberally supplied with fresh water. The second day after farrowing she should be given a small feed of shorts and skim milk made into a thin slop. If there is no skim milk on hand mix 4 parts of corn with 1 of shorts, cowpeas, soybean meal or peanuts and give a small quantity. She should be gradually brought up to a full feed. This should require about 3 weeks. If she is overfed at first, the pigs are likely to take the scours and thumps. When on a full feed in a dry lot, she will eat about 4 pounds of grain per day for each 100 pounds she weighs. If she weighs 200 pounds she will need about 8 pounds per day. If she weighs 250 pounds she will need about 10 pounds per day. If she has the run of a good pasture at least one half of the grain will be saved. If no pasture can be provided, she will need to be fed about the same as she was before farrowing time, except that she will need more grain than when dry. When the pasture is composed of Bermuda grass a grain ration equivalent to 3% of her live weight should be fed and the grain part of the ration should be shorts, tankage and cowpeas.

Feed For the Pigs Before Weaning.—If given an opportunity the pigs will begin to eat when about 3 weeks old. For these young animals nothing is superior to skim milk mixed with shorts. Many farmers have no skim milk and in this case a thin slop of shorts will be the best thing to feed until the pigs are from 4 to 6 weeks old, after which time the ration should be made up of equal parts of corn meal and shorts. These young animals should not be fed on corn alone. They should rather be given such feeds as skim milk, shorts, cowpeas, soybeans, meal and peanuts because they make bone and muscle.

Weaning the Pigs.—Don't wean under 8 weeks of age. It is better not to wean until 10 or 12 weeks of age. The mother's feed at weaning time should be reduced so that the flow of milk will be checked. If full feed is continued when the pigs are

weaned, the mother's teats and udders are apt to be ruined. Gains on young suckling pigs can be made as cheap by feeding a given amount of feed to the mother as feeding directly to the pigs, yet the pigs should be accustomed to feeds before they are taken from the mother, if not they are sure to be seriously checked in their growth. Feed what they will readily clean up of 5 parts corn meal, 5 parts of shorts and 1 part of tankage or 9 parts of corn meal to 1 part of tankage, bran or middlings for young pigs; and for adult pigs 1 part tankage to 11 parts of corn, bran or middlings will balance the rations in the proper proportion of each to build up the bone and muscle of the pig. Pigs 8 to 9 weeks old should weigh from 35 to 40 pounds each.

All club members who will have pigs to sell this spring are urged to do their very best with them. Perhaps the above suggestions will help you if you will carry them out. Do not be disappointed if you do not get the price that you think you ought to have for your pigs. A good registered pig, 8 to 10 weeks old, weighing from 35 to 40 pounds is easily worth 12 dollars or more but if you fail the first time, don't become discouraged. Read your bulletins and follow instructions. Attend to your pig and care for the little ones. There is a good chance for all club members to make good money with their pigs. News is coming in from many members, telling me that Betty has just found 12 pigs or less and I am anxious that they grow to be strong thrifty pigs—pigs that will make the buyer proud—pigs that will make you a reputation. All members are asked to write to this office for any problem that might confront them and if you will have any good heavy sound sow pigs to sell between now and April 1st, that can be registered, write me.

Circular No. 11.—Pig.

HINTS ON MANAGING THE SOW AND HER LITTER.

Selection of Brood Sow and Pigs.

1. Select your pig from prolific sows of eight to ten per litter that have proven themselves to be good quiet mothers.
2. Select your pigs from sows with thick, deep, lengthy sides, and good arched backs and strong pasterns.
3. The best mothers and suckers are generally those that have the most teats, preferably 12-14.
4. Select gilts that are well developed for age. A pig eight weeks old should weigh not less than 30 or 35 pounds.
5. Mark your pigs when one to three days old. It will help in selecting your breeding stock.

Breeding:

6. Development for age should determine the breeding age



The Aim of Every Pig Club Member.

of young gilts. It is not advisable to breed gilts under nine months of age.

7. Breed gilts to old boars rather than to young ones if the old boar is as good as the young one.

8. Gilts that bring but one litter the first year have a greater opportunity for development.

9. Breed old mature sows for two litters a year.

10. The sow should be in good condition at breeding time.

11. The overfat or poorly nourished sow is not in the best condition to develop and suckle strong, large litters.

Feed and Care Before Farrowing:

12. A good brood sow is a gold bond, and her pigs are coupons; therefore, begin to feed the young pigs before they are born.

13. To insure the best development of uniform pigs, feed bone and muscle-building feeds, such as alfalfa pasture, with some corn each day, peas, shorts, tankage, skimmed milk or peanuts along with the corn.

14. Do not neglect feeding the sow the latter part of gestation period when unborn pigs are making greatest development.

15. A ration of corn alone tends to make the sows overfat and feverish at farrowing time.

16. Corn alone is deficient in bone and muscle-building

material necessary for the development of large, strong pigs weighing about two to three pounds or more at birth.

17. Avoid a constipated and feverish condition at farrowing time by feeding a slop feed of shorts and bran or a mixture of corn 4 parts, shorts 2.5 parts, bran 2.5 parts, tankage 1 part.

18. Supply the sow with exercise by feeding her some distance from the sleeping quarters.

19. Wheat bran is good to feed a week before and a week after farrowing. The flakes act as a laxative; it is cooling to the blood, nutritious and a good milk producer.

20. Sows given exercise bring better litters than pen fed sows.

21. Reduce the sow's ration just before farrowing and gradually increase to full feed 10 days after farrowing.

22. Sows should have access to a lime-charcoal mixture and salt at all times. See Farmers' Bulletin No. 566, page 9.

23. Sows may eat their pigs, due to an unbalanced ration and feverish condition at farrowing time. Remedy: Feed one-half to one pound of fresh salt pork and watch animal for several days. In some instances this habit necessitates disposal of the sow.

24. Feed 1 or 2 per cent grain ration while sows are on pasture or eating legume hay such as peanuts, clover, soybean or cowpea hay.

25. Sows may farrow dead pigs if made to step over raised boards to get into pens and by walking over ridges or rough plowed land.

26. Do not let a boar run with your sow near farrowing time. It may mean dead pigs at farrowing time, and perhaps a dead sow.

27. Avoid letting your sow run with horses or cattle near farrowing time. It may mean dead pigs at birth.

28. Do not let your sow run with fattening sows. It may mean dead pigs or a dead sow at farrowing time.

29. If we fail to save the litter of a prolific sow at farrowing time, our negligence has offset the meritorious quality of the sow.

Rations for Brood Sows:

30. Equal parts, shorts, corn and ground oats. Corn three parts, skim milk or buttermilk one part. Corn one part, tankage one part. Corn three to five parts, with one to two parts of beans, peanuts, cowpeas, and soy beans. Rice byproducts. See Arkansas Bulletin No. 128.

31. Legume hay and root crops may be used to furnish bulk to winter ration. Pasture and forage crops supply bulk to summer ration.

Care of the Sow at Farrowing Time:

32. Provide a good shelter two weeks ahead. Build a fender in the house to protect the young pigs. See Farmers' Bulletin No. 205, page 28, "Pig Management."

33. About 10 days before farrowing time the sow should be separated from the herd so as to become used to her new quarters.

34. Make a good bed of chopped or short straw, leaves or hay. Do not have too much.

35. Kindness wins favor with the sow. Pet her.

36. Be present at farrowing time to care for young pigs. Sixty per cent of young pigs are lost before three days old.

37. Keep the pigs in a box until the sow has finished farrowing. In cold weather, heat the box by means of hot bricks or stone.

38. Chilled pigs may be revived by immersing in warm water and rubbing dry.

39. In cold weather give warm water and in hot weather give clear fresh water only for the first 24 hours.

40. Feed grain and milk sparingly for three or four days.

41. The first feed should consist of a slop made of shorts and not over half a gallon or a quarter of a pound of bran fed twice a day.

42. Gradually increase the ration to full feed in 10 to 14 days after farrowing.

43. Feed no corn the first week. Corn may be added to shorts after this time and gradually increased by end of the second week.

Pushing the Suckling Pigs:

44. Feed the sow lightly at first.

45. Slowly increase her feed. Do not change the ration suddenly.

46. After your pigs are two weeks old, feed your sow skimmed milk tankage, shorts and hay from clover, alfalfa or peanuts.

47. Heavy feeding of corn may cause your pigs to have thumps, and thumps in pigs usually means death. Feed other things to the sow along with corn and allow pigs plenty of exercise in a large lot.

48. Start the young pigs to eating as early as possible by supplying a thin slop of shorts and shelled corn in a creep away from the sows.

49. Make the creep door or opening perpendicular to prevent pigs from becoming ruptured or sway-backed.

50. If you have no milk, feed equal parts of corn meal and shorts made into a slop.

51. Begin to feed soaked corn to your pigs when four weeks old.
52. Don't wean pigs until they are eight to ten weeks old.
53. Pigs will grow best if fed small amounts often rather than all they can eat twice a day.
54. Scours in suckling pigs may be due to overfeeding of sow, sour feed and dirty pens. Remedy: Reduce sow's ration and feed one-half teaspoonful of copperas for two to three feeds.
55. A wet and dirty pen may cause pigs' tails to drop off. Remedy: Clean pens and grease tails with lard or carbolated vaseline.
56. Feed the pigs dry feeds and grain after they get older by means of a self-feeder. Write H. K. Sanders, Old State House, Little Rock, Ark., for a plan "How to Build a Self-Feeder."
57. Feed grain while pigs are on pasture.
59. Do not allow the young pigs to become stunted.
60. Feed corn shorts and tankage in a self-feeder and the pig will do the rest.
61. Remember that a wet bed for your pigs to lie in might cause you to lose half of them.
62. When you slop your pigs, feed them in a low, flat trough. Don't make them hump over a high trough to eat. Take a board 12 inches wide, as long as you need, and nail three-inch side pieces on it for pigs. It is a sensible trough from many standpoints.
63. If the hair is standing the wrong way on those pigs there is something wrong. Better look for the cause and remedy it.
64. Keep the lime-charcoal mixture before your pigs all the time. This furnishes the necessary mineral elements to make a large bone for your pig. Keep the pigs healthy. Read page 9, Farmers' Bulletin No. 566, "Boys' Pig Clubs." Write for the bulletin if you need it.
65. Keep the curl of the pig's tail there all the time by careful feed, attention and sanitation. It means profit to do so.
66. It is a mistake to think that the pigs can thrive in unclean quarters. The pig is the cleanest animal in existence if given half a chance. It likes to be clean. It likes clean food and warm food when it is cold weather, plenty of something green to eat winter and summer, a nice place to exercise, and a clean, dry bed when it gets home at night.

QUESTIONS.

1. What should be provided before farrowing time?
2. Of what should the bed be made?
3. What should be given the sow for the first 24 hours?
4. How should grain and milk be fed the first 3 days?
5. Should corn be fed the first week?

6. What per cent of pigs are lost before they are 3 days old? What causes this big loss?

1. How should the sow be fed at first?
2. Should the ration be suddenly changed?
3. What should be fed the sow when the pigs are 3 weeks old?
4. What causes thumps in pigs?
5. When should you begin feeding young pigs? How?
6. Give a good ration for a young pig?
7. At what age should soaked corn be fed young pigs?
8. How old should pigs be before they are weaned?
9. How would you feed pigs to make them grow best?
10. What causes scours in pigs?
11. Should pigs have wet, damp beds?
12. What kind of troughs should pigs have to eat out of?
13. Should pigs have clean quarters? Why?

CALF.

Circular No. 1.—Calf.

SELECTING THE CALF.

By J. H. McLEOD.

The best possible start a boy can have in growing a calf is to begin with a good individual. For a calf to be a good individual, it need not necessarily be a registered animal. Good, high-grade beef and dairy female calves can be selected that will pay a profit. All bull calves should be registered.

Select calves coming from good, strong parents. It is not necessary that the mother be pure bred, although it would be well for her to be a good high-grade. The sire of the calf should be a registered animal and both sire and dam should show the strong points we would like to see in our calf.

Cattle are divided up into three general classes:

- (1) Beef breeds.
- (2) Dairy breeds.
- (3) Dual purpose breeds.

Each of these classes have some special functions to perform. As the name implies, the special function of the beef breed is to produce beef; the dairy breed is to produce milk, while the dual-purpose breed is supposed to make a combination of both milk and beef.

The kind of calf the boy selects should be governed by his object in growing a calf. Do you want beef, milk or a combination of beef and milk? After you have decided upon the type you desire then use the score card to help select the best of the type you have chosen. You will not be able to find a perfect



A Good Type of Dairy Calves.



A Good Type of Beef Calves.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

animal; if you could, it would cost more money than you would care to pay.

By studying the score card, you can tell the most important points to take into consideration in selecting your calf. A score card for the dual purpose calf is not given. In selecting an animal of this type one must take into consideration that he is looking for beef characteristics combined with milk characteristics. The supply of good dual purpose cattle, however, is very scarce so it is doubtful whether these animals can be found at reasonable prices.

SCORE CARD FOR DAIRY HEIFER CALVES.

Age.....	Scale of Points.	Possible Score.
General Appearance—40 points.		
Weight proportionate to age and breed. Est.....		8
Actual.....		8
Form, deep, long, wide; ribs well sprung; top and bottom lines level and parallel; rump long, level and wide		10
Head, well proportioned, clean cut; face dished; muzzle broad.....		4
Neck, clean at throat, long free from dewlap, well joined to shoulders.....		3
Quality, hair fine, bone clean and smooth and proportionate to body in size.....		5
Disposition, active and alert.....		8
Color, distinct and characteristic of breed.....		2
Constitution and Health—20 points.		
Skin, clean, pliable and oily.....		6
Nostrils, open.....		2
Eyes, prominent and bright.....		2
Heart Girth, large full at crop and fore flank.....		6
Backbone, straight and strong.....		4
Condition—20 points.		
Body, medium well fleshed, indicative of dairy form.....		15
Hair, fine, soft and straight.....		5
Milk Organs—20 points.		
Well developed indications of large and symmetrical udder		10
Teats, good even size and well placed.....		8
Mammary Veins, extending well forward as determined by wells		2
Total		100

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

SCORE CARD FOR BEEF CALVES.

Age.....	Scale of Points.	Possible Score.
General Appearance—50 points.		
Weight, proportionate to age and breed. Est.....		
Actual.....		10
Form, deep and long, thick and wide; ribs well sprung, top and bottom lines level and parallel; rump long, level and loin short front to rear, wide and level; thighs muscular twist plump and deep; back straight and wide		12
Head, broad, face dished, muzzle large.....		5
Neck, short, full, free from dewlap, neatly joined to head and shoulders		3
Quality, hair fine, bone clean and smooth and proportionate to body in size.....		10
Disposition, active and alert, neither nervous nor sullen....		8
Color, distinct and characteristic of breed.....		2
Constitution and Health—25 points.		
Skin, clean, pliable and oily.....		6
Nostrils, open		2
Eyes, prominent and bright.....		2
Heart Girth, large and full at crops and fore flanks.....		10
Back, straight, strong and wide.....		5
Condition—25 points.		
Body, thickly fleshed, indicative of beef form.....		20
Hair, heavy, mossy, soft and straight.....		5
Total		100

QUESTIONS ON SELECTING THE CALF.

1. Name the best way a boy can start in growing a calf?
2. What kind of calf would you select for your club calf?
3. Name three general classes of cattle and functions of each.

Circular No. 2.—Calf.

PASTURE FOR CALF.

By LOUIS SAWYER.

Keep the calf on pasture as long as there is good grass to eat. One of our cheapest feeds is pasture grass. The calf should always be given all it will consume of the good, succulent feed.

The calf will require about one-half acre of good pasture.

If your half-acre pasture is on a hilly or rolling field in northern Arkansas, sow the following seed after they are well mixed: Fifteen pounds orchard grass, 4 pounds Kentucky blue

grass, 2 pounds white clover. The ground should be plowed and harrowed very fine before any grass material is sown. This mixture should be sown about the first of March and harrowed into the ground so none of the seed is over one inch deep. The weeds should be mowed several times each summer.

If your half-acre is a sandy and level field in northern Arkansas, or any field in central or southern Arkansas, small bunches of Bermuda sod should be set out about one foot apart in the rows, and the rows should be about 1½ feet apart. This should be set out during the rainy season during March, April or May. After the sod is set, sow about four pounds of white clover or 10 pounds of bur clover in the bur.

If your half-acre is a wet field, the following mixture should be sown: Six pounds of red top and 2 pounds of Alsike clover. This mixture should be sown about the 1st of March and harrowed in so not any of the seed is over one inch deep into the ground.

You should also have wheat or rye pasture for the calf in the winter. Select a half-acre that will dry up quickly after each rain, plow the ground and harrow down very fine. If you can secure a drill, drill in 30 pounds of rye on the half-acre about the 1st of September. Do not cover any of the seed over 1½ inches deep. If you cannot secure a drill, sow the seed by hand and harrow it in. Do not let the calf run on this pasture when the ground is very wet. In central and southern Arkansas, oats may be used for winter pasture and the grain harvested for feed the following spring.

Alfalfa, red clover and sweet clover should not be pastured. They are meadow grasses and should be cut for hay. There is a great danger of losing the calf with bloat when pastured on the above meadow crops.

ROUGHAGES TO FEED THE CALF.

Hay.—When the pasture begins to fail, the calf should be fed all of the alfalfa, clover or pea hay it will clean up twice a day, morning and night. If the calf is put in a barn at any time, a little hay should be fed to it. Timothy or wild hay is unsatisfactory and should not be fed to the calf. During the winter the hay should always be the last feed given the calf. It is the feed to finish up the calf and should be given after the calf has finished eating the coarser silage or fodders.

Corn Silage.—Good silage is an excellent feed for cattle and can hardly be replaced for growing calves. Moldy, spoiled, or frozen silage is injurious and should never be fed to any class of cattle. The calf should be given all it will consume twice a day, immediately after it has finished eating its grain.

Corn Fodder or Sorghum Fodder.—If the silage is not

obtainable, the corn fodder or sorghum fodder may make up the bulk of the roughage. Feed the calf all it will clean up of these coarse roughages before the hay is given. It will take more hay when the fodder is fed instead of the silage.

QUESTIONS ON PASTURE FOR THE CALF.

1. Where should the calf be kept?
2. Name one of the cheapest feeds for a calf.
3. About what size pasture does a calf need?
4. Name a pasture for northern Arkansas. How should the land be prepared?
5. What kind of pasture is best suited for southern Arkansas? How would you prepare the land?
6. What would you sow if the calf pasture is a wet field?
7. What should you sow for your calf's pasture, in addition to the permanent pasture?
8. Should alfalfa, red clover and sweet clover be pastured? Why?
9. What is said about hay as a roughage to feed the calf? Corn silage? Corn fodder or sorghum fodder?

Circular No. 3.—Calf.

GRAIN RATION FOR THE CALF.

By LOUIS SAWYER.

Oats.—Preferably rolled or ground should make up at least half of the grain mixture. They are builders of muscle and bone. They make a fast gain and leave a smooth uniform finish.

Corn should be fed lightly. It is a fattening feed and not a growing feed. It should not make up over one-fourth of the mixture.

Cottonseed Meal should make up about one-tenth of the mixture. It is an excellent feed for calves when not fed in too large quantities. A little salt should always be added to the mixture.

A satisfactory mixture for your calf is:

4 buckets oats, rolled or ground.

1 bucket coarsely cracked corn.

$\frac{1}{2}$ bucket cottonseed meal (ground to pea size.)

2 handfuls of salt.

(Using a half-bushel bucket.)

The feed should be thoroughly mixed. Measure out about a half gallon of the mixture. This should be dampened so it will barely stick together when pressed with the hands. This wet feed should never be kept over night or allowed to sour. It should always be fed freshly dampened.

If molasses or sorghum is obtainable a mixture of three-fourths water and one-fourth of the molasses or sorghum can be used instead of the water alone. Molasses is always liked

by cattle and will cause the calf to eat the grain more eagerly. About a half gallon of the grain mixture with a pasture or silage and hay should be fed morning and night. If you have only fodder and hay, more of the grain mixture should be fed, preferably from three-fourths to one gallon per feed.

Salt should be before the calf all the time.—There should be a small box in the corner of the stall or pasture in which salt should be kept at all times, thus giving the calf access to it at free will.

Fresh, clean water should be kept before the calf.—The calf should have access to either a fresh running stream of water or fresh water in a trough or bucket. It should be allowed water as it desires.

If the calf should go off feed.—If at any time the calf does not clean up its grain mixture or hay, feed a smaller amount the next feed and continue decreasing it until it is again cleaning up all of its feed.

The calf must have feed to grow and develop.—It will make a gain that will pay for the feed and leave a big profit if it is properly fed and cared for.

QUESTIONS ON GREEN RATION FOR THE CALF.

1. How should oats be fed to calves? Are they muscle builders or fat builders? What kind of finish does oats leave?
2. Why should corn be fed lightly?
3. What part of the mixture should cottonseed meal make?
4. Give a satisfactory mixture for your calf.
5. How would you prepare this mixture? Why would you not feed it after it has stood over night?
6. Give a mixture if molasses or sorghum is to be fed.
7. What is said about keeping salt before your calf all the time? Fresh, clean water?
8. If the calf goes off feed, what would you do?

Circular No. 4.—Calf.

CARE AND MANAGEMENT OF THE CALF.

By LOUIS SAWYER.

From the time the calf is weaned until the following fall, the management will mainly be, to feed properly, to water regularly and to see that the calf is protected from an excess of wet weather and severe storms.

It should be fed and watered regularly.—If you practice feeding at 6 o'clock in the morning and again at 6 o'clock at night, the calf will soon become as accustomed to eating at those hours as people become accustomed to their regular meals. The regular feeding is essential to good growth.

The calf must have water.—It should be allowed to run either to a stream of water, or some other watering device that will furnish fresh water all times of the day. If such arrangements can not be made, the next best is leading the calf to water at least three times a day.

It must have a dry bed and dry feed ground.—During the dry weather, a calf will do about as well if kept in a well drained lot, where feed may be fed or where the calf can lay down on dry ground. A little straw scattered on the ground will be picked over by the calf and the balance will pay well for itself if used for a bed.

There should be a shed or stall; that the calf can go under during stormy weather. This may be an open shed, a stall in the barn or any shelter which has a roof, a dry floor and sides that break the cold, stormy wind. The open barn or shed is preferable to the tight stall. The stall should always be kept clean and should be well bedded with about a foot of straw. The straw should be shaken up several times during the day, to keep a soft bed.

Only a rope halter should be used.—A rope halter that is made so it binds around the jaw when the tie rope is pulled, should be used on the calf. The leather halter or any halter that does not bind is not as effective. It gives the calf a chance to do very much as it desires and too great a chance to break loose. In breaking the calf to lead, you should always stay in front of the animal, giving it the slow steady pull, first to one side and then to the other until the calf gives up and is willing to follow you.

Treat the calf as your best friend.—It should never be mistreated so that it acts afraid of you when you come into the stall or lot. Let it know that you are its friend, but that it also has to do as you desire. A pat of the hand, a little feed or any other friendly move with which to persuade the calf is on the road to success in the cattle business. Do not spoil the calf on the start by trying to lead him alone and letting it get away, or by trying to catch it in a big lot and having it go through a fence, when it could have been caught in the stall or in a small corral. If a calf is successful in not letting you do as you desire, it will soon think it does not have to obey and will try to do the opposite as you desire or try to get away.

There are many other things that you can do that will make the calf grow faster. You should always use your own judgment and carry out such advantages to the calf as you see fit.

QUESTIONS ON CARE AND MANAGEMENT OF THE CALF.

1. How would you manage the calf from the time it is weaned until the following fall?

2. What is said about feeding and watering regularly?
3. How many times a day should the calf be watered?
4. Is a dry bed important for the calf?
5. Would you have a shed for your calf?
6. Why should a rope halter be used?
7. How would you treat your calf?
8. Name a way in which you can spoil your calf.

SHEEP.

Circular No. 1.—Sheep.

SELECTING THE EWE.

By J. H. McLEOD.

The breeding and individuality of the sheep will determine to a large extent the boy's success in the sheep club. Do not expect to find a perfect sheep—there are none. One should pay particular attention to see that the sheep has a good, strong back, a well developed loin and hind quarters, as it is from these parts that the highest priced cuts of meat are obtained. Due consideration should also be given to the form, quality and constitution of the sheep. A broad, low set deep bodied animal will mature more quickly and put on flesh more rapidly than the shallow body rangy type. Constitution is judged by the appearance of the chest, that is, its depth and width. Without constitution an animal may lack vigor and be a poor feeder and breeder.

Quality is indicated by the cleanliness of the bone, the fineness of the skin and the nature of the hair covering the face and legs. Quality is important in either breeding sheep or sheep intended for butcher purposes. The more quality possessed by a sheep the larger percentage of good edible meat it is capable of producing.

In judging sheep one cannot determine the form of the animal with the eye. On account of the covering of wool it is necessary to resort to the fingers, in other words "see with the fingers." It is with the hand and fingers that one determines the straightness of the back, the spring of the ribs, the fullness of the leg of mutton, the depth of the chest, etc., in fact all points of the sheep covered by wool.

As sheep are bred not only for mutton, but also for wool, it is necessary to place some value upon the nature of the wool. The chief points to take into consideration in examining the fleece are quality, quantity and condition.

The best wool is found over the shoulders and the poorest over the thigh. The most satisfactory method of arriving at the nature of the fleece is to place the hands side by side in a flat position and gently pull the hands apart until the wool is sufficiently open for inspection. The usual method of examining

the fleece is to open first the wool over the shoulders, then over the thigh and last over the belly. By examining the fleece in these three parts one can arrive at a fair estimate of its qualities. The score card given below is intended to be used in the selection of mutton sheep. The breeds of mutton sheep include the Southdowns, Shropshires, Hampshires, Oxfords, Dorsets, Cheviots, Suffolks and Tunis. The first three named breeds are the most popular.

The above points are mentioned as being some of the more important ones. There are many more that should be taken into consideration. Study the score card in order to become familiar with the scale of points.

Boys joining the Sheep Club should read Farmers' Bulletins Nos. 576 and 840.

QUESTIONS ON SELECTING THE EWE.

1. In selecting a ewe, what would you look for?
2. What kind of body should the ewe have?
3. What is constitution judged by?
4. In judging sheep, what is meant by "seeing with the fingers?"
5. Where is the best wool found on a sheep?
6. Name a method of examining the fleece.
7. Can you name some mutton sheep?

SCORE CARD FOR EWE.

Scale of Points.

General Appearance —40 points.	Possible Score.
Weight—Proportionate to age and breed Est.....	
Actual.....	8
Form —Deep, low, thick and wide; ribs, deep and arched; top and bottom lines level and parallel; rump and body long, level and wide; loin, broad and thick; thighs, full, well fleshed; twist, plump and deep; back, straight and wide	12
Head —Broad, reasonably long, muzzle fair size.....	4
Neck —Short, reasonably slender; throat clean.....	3
Quality —Silky hair, clean bone, proportionate to body in size	6
Disposition —Active and alert	5
Markings —Distinct and characteristic of the breed.....	2
Constitution and Health —25 points.	
Skin —Clean, pinkish appearance and oily.....	6
Nostrils —Open	
Eyes —Full and bright.....	2
Heart Girth —Deep, with large circumference.....	10
Back —Straight, strong, wide.....	5

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Condition—20 points.

Body —Well fleshed and compact.....	15
Hair —Fine and glossy in appearance.....	5

Wool—15 points.

Quantity —Long, dense, even.....	6
Quality —Fine, soft, pure, even.....	5
Condition —Bright, strong, clean.....	4

Total	100
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Circular No. 2.—Sheep.

FEEDING THE CLUB EWE AND LAMB.

By LOUIS SAWYER.

Whenever there is not sufficient grass to keep the ewe giving plenty of milk or gaining in weight, she should have either alfalfa, clover or pea hay fed to her twice a day, morning and night. She should be fed all that will be cleaned up each time.

Along with the hay in the winter the cheaper roughage may be fed and may make up the bulk of the ration.

Corn Silage.—Good corn silage is an excellent feed for the ewe. Moldy, spoiled or frozen silage should never be fed. It has an injurious effect and has caused many ewes to die. The good silage should be fed before the hay, in the morning and in the evening. The ewe should be given all she will eagerly clean up.

Corn Fodder or Sorghum.—If corn silage is not obtainable, the corn fodder or sorghum fodder may make up the bulk of the roughage. All a ewe will clean up should be fed before the hay is fed. It will take more hay where the fodder is fed instead of the silage.

Grain to Feed.—If the ewe is fed all of the alfalfa, clover or pea hay she will clean up, there will not be any need of grain until about one month before she lambs.

The following mixture is suggested for the ewe during the month just before lambing:

4 buckets of coarsely cracked corn.

4 buckets of rolled or ground oats.

1 bucket of cottonseed meal.

2 handfuls of salt.

(Using one-half bushel bucket.)

Mix the feed thoroughly.

Feed about one-half pound of this mixture morning and night. Feed the grain first or before any of the roughage is fed.

Keep Salt Before the Ewe at All Times.—The rock salt is very satisfactory. It will not waste as badly as the fine salt, and the ewe will nibble it off as fast as it is desired.

Keep Water Before the Sheep at All Times.—The pasture in which she is kept should have clean, fresh, running water or water in a trough or bucket that is obtainable at all times. If she is in a stall or small lot, there should be a trough or a bucket filled with water that she may go to at any time.

Feeding the Lamb.—As soon as the lamb is ten days or two weeks old, a small pen with a gate that allows the lamb to enter and does not admit the ewe should be built. Such a pen is called a creep.

A trough with two partitions, making three separate places for the feed, should be placed in this pen. In each division of the trough, place one of the feeds that you have on the farm; in one apartment, you should place cracked corn, in another, rolled or ground oats, and in the other, cottonseed meal. If you have bran, another place should be made for it. Thus the lamb may choose its own grain. In other words, the lambs will be "Free Choice Self-Fed," they will select the grain they desire and eat all they desire.

With all the milk from the ewe and the grain at free will, the lamb will be ready for market when it is three to four months old, or at a season of the year when lambs on the market are a high price.

QUESTIONS ON FEEDING THE CLUB EWE AND LAMB.

1. What should you feed your ewe and lamb when there is not enough grass?
2. How often should they be fed?
3. What is said about corn silage as a feed for the ewe?
4. Should you feed moldy, spoiled or frozen silage?
5. What is said about corn fodder or sorghum fodder as feed for your ewe?
6. Name a good mixture to feed the ewe. How much should be fed at each time?
7. What is said about keeping salt and water before the sheep?
8. What is a lamb creep?
9. How should a trough be made, and how should they be allowed to eat.
10. If the ewe and lamb have all they can eat, at what age will the lamb be ready for market?

Circular No. 3.—Sheep.

THE PASTURE FOR THE EWE AND LAMB.

By LOUIS SAWYER.

The ewe should have about one-fourth of an acre of permanent pasture. If you have a hilly pasture in northern Arkansas, mix the following amount of seed: Eight pounds of orchard grass, 2 pounds of blue grass and 1 pound of white

clover. This should be sown about the first of March after the ground has been plowed and finely harrowed into a good seed bed. It should be harrowed after seeding so the seed is not over an inch deep in the ground.

In central and southern Arkansas you had better set out Bermuda sod. Small bunches of the sod should be set out about one foot apart in the row and the rows should be about one and one-half feet apart. This should be set out during the rainy season, during March, April or May. After the sod is set, sow about four pounds of white clover and ten pounds of bur clover in the bur.

Sheep pasture should never be on wet ground.

The first year the annual pastures may have to be used. Rape is one of the best annual sheep pastures. It will take about one-fourth acre of rape to furnish pasture for the ewe and lamb. Sow about 2 pounds of seed on this one-fourth acre after it has been plowed and finely harrowed. It should be seeded during March and harrowed in very shallow, so not any of the seed is over one-inch deep in the ground. There is danger of the ewe bloating on rape pasture. The only prevention is to turn the sheep on this pasture only when it is free from dew or frost, and to watch the animals very closely at all times.

In the fall the winter pasture should be sown. On about one-fourth acre sow three-fourths of a bushel of rye. One bushel of oats may be sown instead of rye in central or southern Arkansas. The ground should be plowed and finely harrowed. If it can be drilled into the ground you are sure to secure a better stand. If it is sown it should be covered with the harrow. Do not cover any of the seed over an inch deep. This will furnish pasture most of the winter. Do not pasture it when the ground is wet.

Alfalfa, red clover and sweet clover are not usually pastured with sheep. They are meadow grasses and should be cut for hay. There is a great danger of losing the sheep with bloat when pastured on the above meadow crops.

Rotating the Pasture.—In summer the ewe and lamb should be changed from one part of the pasture to another about every two weeks. The reason for this is to prevent stomach worms and other parasites from being swallowed by the ewe and lamb. Most worms or parasites that injure the sheep will grow from cysts in the droppings. They are large enough to crawl to the end of the blades of grass in about two weeks. The lamb or ewe swallows the grass upon which the small worm is waiting. It is taken into the stomach and there grows about one inch long. All of these draw their nourishment from the lamb and ewe. When developed enough, it will weaken the animal and in time cause its death. Thus the lamb and ewe must be placed on a

new pasture every two weeks or before the worms grow large enough to crawl upon the blades of grass. Many sheep are infested with stomach worms. The first precaution is to try to get a ewe that is not infected with parasites. Our western range sheep are freer from parasites than any other class of sheep. The pasture may be divided by movable panels to overcome the need of so many fences.

QUESTIONS ON PASTURE FOR THE EWE AND LAMB.

1. What sized pasture should the ewe have?
2. Name a mixture for a permanent pasture in northern Arkansas. In central and southern Arkansas.
3. Should sheep be kept on wet ground?
4. Tell about rape as a pasture for sheep.
5. How would you prepare the land and seed it?
6. What should be sown in the fall for winter pasture?
7. How would you prepare the land and seed it?
8. Would you pasture alfalfa, red clover and sweet clover? Why?
9. Can you name a way for rotating the pasture?
10. Why should sheep not stay on the same pasture very long at a time?

Circular No. 4.—Sheep.

MANAGEMENT OF THE EWE IN FALL AND WINTER.

By LOUIS SAWYER.

In the fall and winter our efforts will be to secure a good crop of lambs in the spring. The ewe should be gaining in weight from the time the flow of milk is stopped, after the lamb is weaned, until she lambs again in the spring.

Time of Breeding.—The ewe should be bred about the last of September or fore part of October. She will carry her lamb about 147 days, and when bred in September, will lamb a few weeks before the grass starts to grow. It is preferable that the ewe lambs before she is turned on the pasture as on grass at lambing time the ewe may have udder trouble and the lamb may scour.

Shelter.—The ewe must have a dry shed to go under during the storms and a dry lot to stay in during clear weather. She should not be placed in a tight stall, but should have plenty of fresh air without being exposed to winter winds or drafts. Part of the feed should be fed in the dry lot during clear weather in order that she may get plenty of exercise. Dry bed footing and a dry bed are two essentials.

Special care should be given to the ewe to prevent her from casting the lamb before it is mature. It is frequently caused by crowding around the feed box, pushing through gates,

jumping over gutters or by rough handling. Before lambing the udder should be cleaned from dirt and all wool clipped off that will interfere with the lamb nursing.

MANAGEMENT OF THE EWE DURING SPRING AND SUMMER.

As the time of lambing approaches, the ewe should be watched very closely; she should not be disturbed during lambing, but left quietly and should not know any one is around her. She should be watched closely enough to be able to give her any assistance she may need, providing there is any delay in giving birth to the lamb.

If the ewe refuses to eat, droops her head and acts very sluggish at lambing time, it is usually a sign that the lamb is dead. The lamb and the afterbirth should be taken from the ewe at once and the ewe washed with a solution of creoline, one part of creoline to 50 parts of water. As soon as the lamb is born, remove the mucous from the nostrils and mouth. If it does not begin to breathe, blow into the nostrils. Give the ewe at least a half hour to clean and dry the lamb. If she should have twins, be sure she cleans both of them. If she gives her attention to one lamb until it is cleaned, she may disown the other. Put them both before her. If she does not clean and dry the lamb, sprinkle a pinch of salt over it.

A lamb in ordinary strength will soon try to nurse. If the lamb is weak, assist it, keeping the ewe still and holding the lamb up to nurse. If the lamb is too weak to nurse, feed it a little of the mother's milk with a spoon and wrap it in cloths warmed over a stove. A little milk and warmth will soon give it sufficient strength to run with the mother. The ewe and lamb should be kept in a small pen by themselves for three days so they will become acquainted before they are put with the flock. The udder of the ewe must be washed and milked out if the lamb does not take all the milk. Do not let the milk flow decrease or let the milk spoil. If the lamb does not get sufficient milk, a little warm cow's milk should be fed it from a bottle until it is large enough to feed grain.

QUESTIONS ON MANAGEMENT OF THE EWE IN FALL AND WINTER.

1. In fall and winter, what should our efforts be?
2. What is said about a shelter for the ewe?
3. How would you feed a weak lamb?

Circular No. 5.—Sheep.

FURTHER MANAGEMENT OF THE EWE AND LAMB.

By LOUIS SAWYER.

Docking the Lambs.—This should be done when the lamb is about a week old. With sharp knife cut the tail off one inch or less from the body and between two joints. If the lamb is only about one week old, there will be very little loss of blood. If they are older, it may be advisable to tie a small string around the tail the first day. The docking should be done in cool weather and when the fleas are not numerous.

Shearing the Ewe.—The ewe should be sheared when warm weather approaches. It should be late enough so she is not exposed to cold weather after she has lost her fleece, and it should be after the lamb is well started. Good shearing requires quick and quiet work, avoiding injury to the ewe and leaving the fleece together. Setting the ewe up between your legs with your left hand holding the front legs of the ewe, shear the belly by splitting the wool in the center. The left hand may be used to stretch the skin tight. Then turning the ewe slightly sideways, shear each side as near to the back as convenient to reach; then laying the ewe's head across your leg, shear the hind legs and rump. Then set the ewe up again, shear from between the legs to the jaw, gradually working each way until the head and neck is sheared. Then turning the ewe's feet toward you, shear the balance off the back that you could not reach from sides, and the fleece should be free from the ewe. The fleece should be folded by laying it on the floor, inside of fleece next to the floor, fold the sides in, and roll from the neck to other end. Tie with cotton or paper twine, wrapped once each way. A twine made of paper, especially for tying wool, called "India" three-ply, and size 4½ is preferable to use. Never use binding twine or any twine from which fiber gets into the wool, as they lower its value.

The ewe and lamb should always have access to salt. In the summer sulphur may be mixed with the salt—just enough sulphur to give the salt a slight yellow tinge.

The sheep should have access to pure, fresh water at all times.

A little tar should be applied on the nose of the sheep, or placed on the edge of the troughs so it will get on the nose during the months of July and August. This is to keep away the gadfly which deposits its eggs on the nostrils, and then hatches and develops into worms.

A sheep should have access to shade during the day.

The ewe lamb should be dipped in the spring after shearing, and again in the fall to kill all ticks.

The lamb may be weaned about September 1st if not sold

before that date. By weaning about the 1st of September, the ewe has time to gain in condition and strength for the breeding season and to get in good shape to go through the winter. The lambs at that time are usually able to continue growth with very little set back.

QUESTIONS ON FURTHER MANAGEMENT OF THE EWE AND LAMB.

1. When should the lamb be docked?
2. Tell all about shearing the ewe?
3. Should the ewe and lamb have access to salt?
4. When should they have sulphur? How much?
5. What good will tar applied to the nose of the sheep do?
6. Would you want a shade in your pasture for your sheep?
7. When should the lamb be dipped?
8. When may the lamb be weaned?

GIRLS' CLUBS.

By MISS CONNIE J. BONSLAGEL,
State Home Demonstration Agent.

Lesson No. 1.—Canning Club.

SELECTING THE PLOT.

Canning Club members are required to select 1/10 of an acre, containing 4,356 square feet. It is highly advisable that this plot be in the shape of a rectangle, that is, long and narrow. A very convenient size to have the plot is 132 feet long by 33 feet wide. Having it in this shape will permit the use of a horse in cultivating.

Kind of Soil.

Most soils will grow tomatoes, but the kind that gives the best results is a sandy loam, well-drained, fertile soil containing a large amount of humus or decayed vegetable matter. If the soil is not already fertile or does not contain the humus, it is well to apply two or three tons of well rotted barnyard manure to the 1/10 acre. This may be done in the fall or winter, or even in the early spring, but must be well worked into the soil, by breaking plow or harrow.

Care should be taken not to select soil that has grown tomatoes the previous year if the tomatoes were diseased, and not to select soil where cotton has been injured by the root knot disease.

Preparation of Seed Bed.

It is not necessary that the land be broken in the fall unless a cover crop is sown and turned under in the spring for humus, and it is not necessary to sow cover crops if the soil

already contains a sufficient amount of humus. The land, however, should be broken early in the spring to a depth of six to eight inches, and should be finely pulverized with a harrow soon after breaking in order that all possible moisture may be retained.

The seed bed must have depth, drainage, must be well pulverized, must be fertile and contain a large amount of humus if you expect your land to yield the greatest possible amount of tomatoes. A deep seed bed furnishes a large storehouse from which the tomato plants may secure their food. A well drained seed bed takes off surplus and unneeded water and permits the air to circulate well in the soil, and an abundance of humus puts life into the soil, absorbs and holds a large amount of moisture, so much needed by the plants. A well pulverized seed bed makes cultivation easy and retains moisture. No amount of cultivation of your tomatoes can make up for a poorly prepared seed bed.

QUESTIONS.

1. How many square feet in $1/10$ of an acre?
2. Would you have the plot square or rectangular? Why?
3. What kind of soil is best adapted to tomato growing?
4. What special care should you use in selecting the soil?
5. What is a well prepared seed bed?
6. What is humus? Its value to the soil and how obtained?

Lesson No. 2.—Canning Club.

STARTING THE PLANTS.

In order to secure early tomatoes, and thus profit by the high price for early tomatoes as well as receive the benefit of early fruit yourself, it is necessary to start your plants in the winter by planting the seed in hot beds in rows two or three inches apart.

How to Make a Hot Bed.

Select a location that will be well exposed to the sun. Dig a trench about 18 inches long, five feet and nine inches wide and six feet long. This will be large enough to grow an ample supply of plants for the $1/10$ acre. Fill the trench almost to the top with fresh horse manure, and pack well by tamping. The manure furnishes the heat for germinating the seed and growing the plants. On top of this manure, spread a layer of rich, loamy soil about three or four inches deep.

In making the frame for the bed, it should slope to the front and toward the south. A height of 15 or 18 inches at the back and about six inches lower at the front is desirable in order to shed the water and to get better results from the rays of the sun. It is better to cover this frame with regular hot bed sash,

and if you have the frame five feet nine inches wide and six feet long, two ordinary hot bed sashes will cover it. By having the sash, it will permit the rays of the sunlight to reach the plants, and the temperature of the bed can better be regulated by use of sashes. However, if sashes cannot be secured, a canvas top may be used. For the first two or three days, the temperature of the hot bed will run very high, in fact, too high to plant the seed; hence you should wait about four or five days or until the temperature drops down to about 80 degrees before planting the seed.

During the bright days, the bed will heat very quickly and it will be necessary to ventilate by raising the sash on the side opposite from the wind. In the evening close the sash in order to get the bed warm before night. Water the bed in the morning on bright days, as watering in the evening on cloudy days will have a tendency to injure the plants and increase the danger of freezing. Ventilate the bed after watering in order to dry off the plants.

COLD FRAMES.

Before the plants are put into the open, it is well to harden them off and this is usually done by means of cold frames. The cold frame is built just like the hot bed except that it does not have the manure. Now it is not necessary to build a cold frame for if your hot bed is large enough, it may serve as a cold frame by simply raising the sash and letting the air and sunlight in. As the plants grow larger and become hardened, the sash may be kept open at night when there is no danger of frost, but remember that the hardening off process must be done gradually to prevent any serious check to the growth.

If neither hot beds nor cold frames are used, boxes may be used. Fill them with rich loamy earth and keep them in the house at a temperature of about 70 degrees. Be sure to keep plenty of moisture in the boxes as the moisture will evaporate faster in the house than if it were in the open; however, the use of boxes is not recommended unless it is absolutely impossible to have the hot bed.

QUESTIONS.

1. Why do you want early tomatoes? How should you start to secure them?
2. What is a hot bed?
3. How would you make a hot bed?
4. What is a cold frame and what is it used for? How is it made?
5. In what other ways may tomato plants be started?
6. Do you have a hot bed? May a hot bed be used for other purposes?

Lesson No. 3.—Canning Club.

TRANSPLANTING INTO THE OPEN FIELD.

Before transplanting into the open, be sure that your seed bed is well pulverized and in good condition. This may be accomplished by running your harrow or drag just previous to setting the plants.

If your seed bed is well drained, the plants should be set nearly on a level. One of the best ways is to take a small shovel plow and open a furrow and set the plants therein. Let your rows be four feet apart, running the long way with the plot, and your plants three feet in the row. If no plow is available, the plants may be set out at the above distance by simply making holes and setting the plants in them.

In removing the plants from the hot bed or boxes wherever they have been started, dampen the soil in order that as much of the soil as possible may adhere to the roots of the plants. If the plants have been growing in tin cans, as is sometimes done, the whole amount of earth in the can may be held together by saturating the soil with water before taking out the plants. Set the plants deep into the soil, in fact, up to the top leaf. This will give you strong, healthy, stalky plants.

Do not set the plants into the open until all danger of frost is past. On cloudy days or in the afternoon is a good time to set the plants, but it need not necessarily be during wet weather as some people seem to think.

If the soil is inclined to be dry, water may be poured around the plants at the time of setting, but loose earth should then be placed around the plant.

QUESTIONS.

1. When is a safe time to put the plants out?
2. At what distance do you put the rows? The plants in the rows?
3. How many plants will there be in the 1/10 acre at these distances?
4. What time of the day is best for setting plants? Why?
5. Would you remove the soil from the roots of the plants before setting?
6. How may you hold a large amount of soil on the roots?
7. May plants be set during dry weather? Would you water the plants then?

Lesson No. 4.—Canning Club.

STAKING, PRUNING AND CULTIVATING.

In order to get earlier, larger and better quality of tomatoes, it is advisable to stake and prune your tomatoes. By "staking" the tomatoes is meant tying the plants to a small pole or stake one or two inches in diameter and about five or six feet high. This is done to prevent the plants from lying on the ground as they continue to grow. If staking is to be done, and it is recommended for Tomato Club Girls, it should be done when the plants are about six to eight inches high. The stake should be set firmly into the ground about four inches from the plant on the side of the plant opposite to the sun. As the plant grows in height, it should be tied to the stake with a soft string. Four or five tyings may be necessary before the plant reaches its full growth. Staking should not be done, however, unless you intend to prune your tomatoes.

By "pruning" tomatoes is meant removing the suckers and developing, if possible, one large stem as the main body of the plant. The growth that would naturally go into the suckers will then go to the main body of the plant and in the fruiting limbs.

HOW TO PRUNE.

1. Find the first blossom on your tomato plant.
2. Find the first branch below the first bloom. (Call it No. 1.)



A Well-staked Tomato Garden.—The Aim of Every Canning Club Girl.

3. Pinch off or cut off all branches below No. 1. All branches below the first are the suckers referred to.

CULTIVATION.

Cultivation is done for two reasons: First, to keep down all vegetation; second to retain moisture and permit the circulation of the air in the soil; hence cultivation should begin almost at the time of setting the plants in order to prevent the weeds or grass from getting a hold and in order to hold the moisture.

Early cultivation may be done by the use of a horse and any sort of implement that will accomplish the desired end. Small harrows are good and will usually destroy all early vegetation and will leave the ground in a well pulverized and level condition. The entire surface of the soil should be stirred, hence it may be necessary to use a hand rake or hoe in order to get close up to the plant. Common judgment must determine just what is the best sort of implement to use in accomplishing the two purposes mentioned in the beginning for cultivation.

At no time should the grass and weeds get a hold or at no time should a crust be allowed to form; hence cultivation should be done at least every week or 10 days and always after each rain as soon as the soil is sufficiently dry. Cultivation should also be continued for some length of time, or in fact as long as the tomato plants continue to yield, which will be late in the summer if proper care has been given the plant by keeping down diseases, insects, etc.

QUESTIONS.

1. What is meant by staking tomato plants? How is it done?
2. What advantage is there in staking them?
3. What is meant by pruning tomato plants? How do you prune?
4. What advantage is there in pruning?
5. If you do not prune the tomatoes, would you stake them?
6. Why do you cultivate? How often? How late?

Lesson No. 5.—Canning Club.

INSECTS OF TOMATOES.

Cut Worms.

The first insect you may have trouble with may probably be the cut worm, with which most of us are familiar. A good remedy for destroying cut worms is poison bait placed so as to kill the worms before transplanting. Have nothing green growing on the plot about two weeks before planting, and this, I am sure, will be the case with most of us. Take cabbage leaves, bunches of clover or weeds and dip into a solution of paris green made

by mixing one tablespoonful of paris green in a bucket of water. Scatter these over the plot in the evening for two or three days before transplanting. Another poison which can be used as a bait after the plants are set out is a mash made by mixing one peck of bran and two cups of cheap molasses with one ounce (two tablespoonfuls) of paris green, and enough water to moisten the mixture. This should be placed in small baits near the plants. Remember that paris green is poison and should be handled with great care. Do not allow chickens or other animals to eat this poison bait. Another way which possibly you may have tried is to wrap each plant when transplanted with a bit of paper which extends about one inch above and one inch below the surface of the ground.

Flea Beetle.

Another insect which may attack your plant is the flea beetle, a tiny, black, jumping beetle which feeds upon the tissues of the leaves. Any one of the following remedies is good for the flea beetle: First, dust the plants thickly with ashes; second, dust the plants thickly with air slacked lime; third, dust the plants slightly with snuff; fourth, dust the plants slightly with one part paris green with one hundred parts of flour; fifth, sprinkle the plants with a mixture of one teaspoonful of Merry War lye to one gallon of water.

Potato Bugs.

When Colorado potato bugs are beginning to destroy the plants, use one of the following: Pick off the first large bugs and destroy them; look for eggs on under side of leaves, pick off part of leaves that have them on; dust the plants with one part paris green to five parts flour or lime, or better still, dust the plants with powdered arsenate of lead.

Tobacco Worms.

If the big, green-horned tobacco worms injure your plants, pick them off and kill them at once. Watch for these closely or else they may do a great deal of damage to the plants. In fighting these insects that injure plants, one must keep in mind that all insects of this nature can be killed in one or two ways, depending upon the habits of the insects. Those insects that bite and actually eat the tissues of plants can be killed by the use of poison baits as has been suggested. Those insects that injure the plants by sucking their juices, as do the bugs and plant lice, can be killed by external poison which comes in contact with their bodies. This is done by spraying, but in order to fight insects successfully one should know the habits of the insects they are fighting in order that they may know the kind of weapon to use.

QUESTIONS.

1. Name some of the common insects. How do you control them?
2. Have you had trouble with insects? How did you fight them?
3. How do you kill insects that bite and actually eat the plant?
4. How do you kill insects that suck the juices of the plants?

Lesson No. 6.—Canning Club.

RULES FOR PREVENTING TOMATO DISEASE.

By MISS MARY CRESWELL, Washington, D. C.

1. **Rotation of Crops.**—Do not plant tomatoes in the same soil oftener than once in three years. Find what crop was on the land last year and look out for diseases of other plants which may also infect tomatoes. One of the most serious of these is root-knot which occurs in sandy soils. You can tell it by the knots or galls on the roots. These are caused by very tiny worms called nematodes. Root-knot attacks cotton, cowpeas, melons, okra, beets, tomatoes, potatoes and other plants. Soil can only be freed from this pest by planting it for two or three years in crops which are not attacked by the root-knot, such as iron cowpeas, corn, oats, velvet beans and peanuts. Be sure that you do not plant your tomatoes where any crop was infected with root-knot last year.

2. **Avoid Use of Fresh Manure.**—If you did not have well rotted manure plowed under last fall, it will be best not to use any. Using fresh manure in the spring will probably cause disease among your plants.

3. **Spray healthy plants with Bordeaux mixture to protect from disease.**

4. **Keep plants in good condition by careful cultivation.**

5. **Pull up and burn all diseased plants promptly.**

Spraying Tomatoes.—To get the best results with Bordeaux mixture spraying should be begun while the plants are young. Spray once about five days before transplanting, then again five days after transplanting and repeat every ten days until the fruit is full grown. A hard rain will frequently wash off the mixture and make it necessary to spray again. Five sprayings should be given during the season. Ten gallons of spray mixture will be necessary for each spraying. Five pounds blue-stone and five pounds of fresh stone lime will be enough for the season. Secure these supplies at the beginning of the season. Have the blue-stone divided into five one-pound lots. The entire quantity

of lime may be slacked at the beginning by adding water slowly until all the lumps are slacked. Keep this slacked lime in a bucket with a little water over it. As long as it is covered with water it is good, but if it is exposed to the air it will dry out and become air slacked. Lime which has been air slacked cannot be used in Bordeaux mixture.

Bordeaux Mixture.—How to make for each spraying.

Copper sulphate (blue-stone).....	1 pound.
Quick lime	1 pound.
Water	10 gallons.

Blue-Stone Solution.—Put 5 gallons of water in a wooden tub. Tie the blue-stone in a coarse sack and hang it in this water near the top. Do not use a metal vessel because the action of the blue-stone on the metal will ruin the vessel. Allow several hours for the blue-stone to dissolve. This can be done more quickly by using hot water.

Lime Solution.—Take one-fifth of the lime which has been slacked by water and mix it thoroughly in 5 gallons of water.

Mixing.—Bordeaux mixture is made out of equal parts of these two solutions. It is important that they be carefully mixed, and that only as much of the mixture be made as can be used at one spraying. Have the lime solution in one vessel and the copper sulphate solution in another. Have ready a third tub or other wooden vessel. Stir the solution well before using. Let two people pour the two solutions into the third vessel at the same time, stirring constantly to insure thorough mixing. Always stir the Bordeaux mixture before putting into the sprayer.

To be of value, spraying must be thoroughly done. The spray mixture must cover the under side of the leaves as well as the upper.

For the tenth acre, a bucket spray pump costing about \$3.00, or a knapsack sprayer costing about \$5.00, will be satisfactory. Every farm should have one of these sprays, which can be used for many purposes and will more than pay for itself in one year. Wash the spray pump thoroughly after each using.

You will find below a chart which gives a description of some of the more important diseases of the tomato and ways of preventing them.

QUESTIONS.

1. Name some methods of preventing tomato diseases.
2. Have your tomatoes been injured by any of the diseases?
3. How do you make the Bordeaux mixture?
4. What is it used for?

INFORMATION CONCERNING TOMATO DISEASES.

Disease	Roots	Stem	Leaves	Fruit	Means of Infections, Etc.	Other Plants Infected	Prevention or Control
Tomato Wilt (Fusarium)	Rotten or black inside	Outside-normal, inside black	Turn yellow and die	Ripen prematurely	Fungus in soil attacks root and stem		Rotation of crops Burn diseased plants
Early blight (Alternaria Solani)	Normal	Sometimes sunken black spots	Brown or black spots; leaves die and fall	Often black circular rotten spots	Wind and insects carry spores to leaves	Probably causes the Irish potato blight	Spray with Bordeaux Mixture. Burn diseased plants
Root-knot	Galls or knots	Normal	Gradually turn yellow	Normal	Nematodes in soil	Many others (see list above)	Grow crops not attacked by root-knot for 2 or 3 years
Sclerotium blight	Normal	Covered near soil with white mold	Wilt gradually from top downward	Normal	Fungus in soil	Peppers	Prune and stake to allow air to circulate near ground; rotate crops
Southern Tomato blight (Bacterial)	Normal	Slightly discolored on inside	Wilt rapidly	Normal	Carried to leaves mainly by biting and sucking insects	Irish potatoes, egg-plant, weeds of same family	Burn infected plants; spray with Bordeaux Mixture
Leaf spot (Septoria)	Normal	Normal	Small black spots at first; later whole leaf dies; lower leaves attacked first	Normal	Entrance through leaves; growth favored by rainy weather		Spray with Bordeaux Mixture
Downy mildew (Phytophthora)	Normal	Turns black and dies; often covered with whitish growth	Leaves attacked first suddenly die and turn black	Brown rot Tissue near stem first turns black and shrivels	Usually occurs with septoria	Probably causes late blight of Irish potatoes	Spray with Bordeaux Mixture Burn infected plants
Blossom end rot	Normal	Normal	Normal	Large sunken black or greenish spots on end	Worse in dry weather		No remedy known except irrigation
Anthraxnose ripe rot		Normal	Normal	Large sunken spots, soft rapid decay	Worse in rainy weather		Preventive measures only; collect and destroy diseased fruit. Prune plants to admit light and air

Lesson No. 7.—Canning Club.

OTHER VEGETABLES.

(From U. S. Department of Agriculture.)

Canning Club girls who do not wish to plant the entire 1/10 acre in tomatoes may plant other vegetables, such as okra, beans and peppers, and this is sometimes highly advisable where there is not a ready market for tomatoes, either fresh or canned. Then, too, beans and okra can be canned to a good advantage and okra is easily combined with tomatoes in making soup mixtures.

For growing beans and okra, the same general directions of preparation of soil, fertilization and cultivation as given for the tomato, will be satisfactory. The seed of these two crops may be planted as soon as the soil has begun to warm up and all danger of frost is over. For a continuous supply of these vegetables, successive plantings, four or five weeks apart, should be made.

OKRA.

Plant seed 3 or 4 inches apart in rows 3½ to 4 feet apart and cover to the depth of 1 to 2 inches according to the soil—the lighter the soil the deeper the seed should be planted. As soon as the plants are well established, thin to 12 to 14 inches apart for dwarf varieties and 18 to 24 inches for the larger growing varieties. The pods should be gathered when they are tender and this will ordinarily require picking every day. The varieties most commonly grown are the tall green long pod, tall green short pod, dwarf green long pod, dwarf short pod and the Lady Finger.

BEANS.

Plant the seed 2 to 4 inches apart in rows 2½ to 3 feet apart and cover 1½ to 2 inches deep. There are two types of bush beans grown in the gardens in this country—the wax and the green pod. The green pod is the better type for canning. The Stringless Green Pod and Refugee are the best canning varieties.

PEPPERS.

Cultivation.—The pepper plant is very similar to the tomato as to the conditions most favorable for its development and is even more sensitive, particularly when young, to checks in growth from cold, wet or unfavorable conditions of soil. In order to get the best returns it is important that there be an unchecked growth from the time of starting the seed until the fruit has ripened. Not infrequently large vigorous plants will yield but very little fruit, and usually this can be traced to a cold, hard, ill-drained soil or to a check in the growth of the young plant from cold. It is wisest, then, to make sure of well drained soil, to put it into the best possible mechanical condition, and to delay

planting until one can be reasonably certain of constant warm weather with the least possible danger from cold or wet. Very satisfactory crops are often grown from seed planted in place in the open field, but there is much greater probability of a good yield from the use of started plants and very often the profit is determined by the character of the plant set.

Growing Plants.—In a general way the best soil to use is one made up of 1/3 by bulk of garden soil, 1/3 of well rotted manure and 1/3 of coarse-grained sand, but the best proportion of each will vary with its character. If the soil is heavy and compact, use less soil and more sand; if it is sandy, use more soil and less sand. If the manure is heavy and poorly rotted, take pains to make it as light as possible and use a larger proportion. It is important that the ingredients be well mixed, which can best be accomplished by throwing them into a conical heap, shoveling this over, and then passing it through a coarse sieve of about a half inch mesh. Carefully level about 2 to 3 inches of this soil in a shallow box and water as thoroughly as possible without making it actually muddy. Let it stand for at least an hour and then add about one-half inch of fresh soil, and in this plant the seed either in drills about ¼-inch deep or scatter over the surface and evenly cover with from ¼ to ½-inch of the fresh earth. If the box is to be exposed to the sun it is well to cover it with a paper, but care must be taken to remove this before the young plants appear, which they should do in from 7 to 12 days. The box should be kept where the temperature can be held as uniformly as possible at 60 to 80 degrees F. It might run higher in midday, but germination will be checked in proportion as it runs lower.

Care should be taken that the young plants are not allowed to be so crowded as to become bleached and tender. It is better to pull and transplant or even throw away some plants rather than have the whole planting permanently injured. As soon as the central bud is well developed the seedlings should be transplanted, setting them from 1 to 3 inches apart, according to the size at which it is planned that they should go into the permanent place in the field. Care should be taken that the soil of the plant bed is such that there is little danger of its becoming compact and hard, but will remain so friable as to enable the plants to be pulled for setting with the least possible injury to the roots. During the germination of the seed and the growth of the young plants, carefully avoid overwatering. Don't water unless the plants show by a tendency to wilt that they need it; then give an abundance. It is much better if this be done in the morning or evening rather than in midday. For five or six days before transplanting, allow the beds to get as dry as pos-

sible without the plants wilting; then 8 to 12 hours before the plants are to go to the field give the bed an abundant watering. In the meantime the soil of the field should have been made as friable as possible by repeated cultivation. After setting the plants, give the field a thorough cultivation, which should be repeated as often as practicable without injuring the plants.

QUESTIONS.

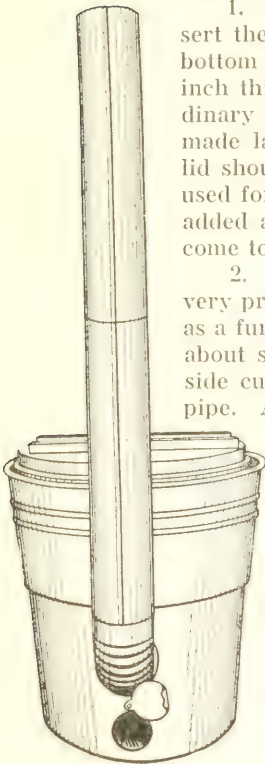
1. Is it necessary for canning club girls to plant their entire 1/10 acre in tomatoes?
2. What other vegetables are recommended?
3. Why are these vegetables recommended for the 1/10 of acre?
4. Tell how you would start pepper plants.

Lesson. No. 8.—Canning Club.

HOW TO MAKE A HOME-MADE CANNER.

1. Take a washpot, reservoir, or lard can and insert therein, as a tray for holding cans or jars, a false bottom of wooden strips, one inch wide by one-eighth inch thick, nailed together like lattice work. If an ordinary size washpot is used, a false bottom should be made large enough to hold six or eight quart jars. A lid should be provided for the washpot or whatever is used for cooking purposes, and enough water should be added after the false bottom and jars are placed in to come to the lid of a Mason jar.

2. Another cheap outfit for use, and one which is very practical, consists of a wornout zinc tub to be used as a furnace. Cut the bottom out of this tub, cut a door about six inches square on one side, and on the other side cut a hole large enough for the elbow of a stove-pipe. Add two joints of pipe and your furnace will be completed. On top of this tub place a good zinc tub, allowing the rim to fit over the one used as a furnace. This tub is the reservoir. Inside this tub place another tub of the same size and cut in the bottom eight holes about the size of a quarter of a dollar. Take care that this tub does not extend more than one inch above the top of the reservoir tub. This is the tray in which to place cans or jars when ready for cooking. No. 2 or No. 3 size tubs should be used for the furnace. A sugar barrel cover may be used for a lid and the efficiency of the entire outfit may be increased by connecting two one-inch pipes to the bottom of the tub used as a reservoir, as this increases the heating capacity.



A Handy Home-made Canner.

List of Companies from Which Canners May Be Purchased.

Homer Canner Co., Hickory, N. C.; Farm Canning Machine Co., Meridian, Miss.; George L. Eubanks, Union City, Ga.; The Rainey Canner Co., Chappel, N. C., and Texarkana, Ark.; Dixie Canner Co., (steam canner) Little Rock, Ark.; Hamp Williams, Hot Springs, Ark.; E. S. Stahl Canner Co., Quincy, Ill.; Modern Canner Manufacturing Co., Chattanooga, Tenn.; American Can Co., Atlanta, Ga.

QUESTIONS.

1. Describe how to make a home-made canner.
2. If there are more ways than one, describe each.
3. About what will be the cost of making a canner from the use of zinc tubs?
4. What sort of canner do you use?
5. What is the difference between a hot water canner and a steam canner?

Lesson No. 9.—Canning Club.

CANNING.

(From States Relation Service Bulletin No. A-81.)

It is important that you get ready for the canning season by securing in advance supplies such as jars, cans with solder-hemmed caps, canning outfit, etc., so that you will allow nothing to go to waste. It is also of the greatest importance that you study your instructions and follow the advice of your County Agent carefully that your products may be of fine quality. Club members must follow these instructions for canning so that all products may be uniform and of standard pack. Tack these rules up by you as you work and observe every one of them. Remember that the 4-H Brand label can be used only on the best and that every can you pack must come up to these standards if sold. By so doing you can secure a good market and sustain your reputation for fine products.

The United States Food and Drugs Act requires that foods in package form which are shipped from one State to another should have the quantity of the contents plainly and conspicuously marked. This applies to canned fruits and vegetables, in which case the net weight should be stated in pounds and ounces. Many States have similar requirements. It is illegal to sell a package containing less than the net weight stated on the label. The directions in this circular enable you not only to comply with Federal requirements, but also to produce the quality required for standard products.

PREPARATIONS FOR CANNING IN TIN.

Making Flux.—Put some commercial hydrochloric (muriatic) acid into a glass or crockery vessel (not metal) add strips of

sheet zinc until no more can be dissolved. To this add an equal quantity of water. Label this "flux" and use carefully. When canning, have one vessel (a can will do) with enough flux in it to clean the tools. Keep separately in a glass bottle the quantity to be used in sealing cans.

Cleaning and Tinning the Steel and Copper.—It is of first importance to have the capping steel and tipping copper in good condition. These may need to be rubbed with coarse sand-paper or on a soft brick to smooth them, or the steel may have to be filed to take the rust off. In the latter case care must be taken to keep the edge of the steel true. Both the capping steel and tipping copper must be kept tinned or coated with solder to make the solder flow evenly when sealing. Have ready in a can a handful of salamoniac mixed with a few pieces of solder. Heat the already smoothed capping steel or tipping copper until almost red hot, dip into the flux, then into the salamoniac and solder, turning it about and rubbing until bright and well coated with solder. Then dip into the flux again.

Preparation of Vegetables.—In securing a fine quality, much depends upon having the vegetables or fruit absolutely fresh, crisp and clean, and kept cool. All surroundings and utensils should be spotlessly clean, and all operations from beginning to end of any lot of canning should be carried on as rapidly as possible. A good slogan is "One hour from the field to the can." First have cans and lids thoroughly washed and scaled. Sort and grade the fruit, discarding all defective ones, and use together those of the same size. Use only uniformly well ripened products. Only young, tender, quickly grown vegetables retain their flavor when canned.

QUESTIONS.

1. What are the absolutely essential steps to be taken in successful canning?
2. What is meant by the 4-H Brand?
3. Should care be taken in the use of this brand?
4. Are there any State laws regarding canning?
5. Are there United States laws, and what are they?
6. What are the three steps in the preparation of canning in tin?
7. What is meant by the term "flux" and how is it made? What is it used for?
8. What is meant by cleaning and tinning the steel and copper?
9. What is the capping steel? What is tipping copper?
10. Why is it necessary to use great care in cleaning the capping steel and tipping copper?
11. What care should be taken in selecting the fruit or vegetables?

12. In what condition must the fruit or vegetables be for canning?

13. In what condition must the utensils be?

14. What about the general surroundings?

15. Is there any better place to practice sanitation than in canning?

16. Are you successful in canning fruits and vegetables? If not, why?

Lesson No. 10.—Canning Club.

STEPS TAKEN IN CANNING IN TIN.

(From States Relation Service Bulletin No. A-81.)

1. Sorting and grading fruit or vegetables, washing, peeling, etc.

2. **Scalding, Peeling, and Coring (for tomatoes).**—Put into trays and lower into boiling water for one minute. Remove at once to prevent cooking. Plunge into cold water to make the fruit firm, and peel promptly. In tomato peeling use a slender pointed knife to cut out the core and be careful not to cut into the seed cells. Keep the tomatoes whole when possible.

3. **Blanching** consists of plunging the vegetables or fruit into boiling water for a short time. Use a wire basket or cheese cloth square for this. The blanch gives a more thorough cleaning, removes the strong odor and flavor from certain kinds of vegetables, improve the texture, and insures a clearer liquor. It also shrinks the fruit or vegetable and makes it more flexible. A full pack is then more easily made. The time required for blanching varies with the state of maturity. Beans should be blanched until tender enough to bend without breaking. Peaches will pack better if quickly blanched by lowering of 15 seconds into water below boiling, (about 180 degrees F.) The same blanch will make the hard varieties of pears pack better and give them a more transparent appearance, and used for cherries, will prevent splitting and cracking. Spraying fruit with cold water after blanching will make it firmer. Frequently it is well to put the vegetables into cold water for an instant after blanching to make more crisp. In blanching asparagus, tie a few stalks in each bundle, lower the bundle into the water, tips up, blanching the lower ends one or two minutes before immersing the tips. Blanch the tips only two or three minutes.

Packing.—(See table for size of cans to use for different vegetables.)—The Federal law requires the cans to be filled as full of food as is practicable for processing and to contain only enough liquor to fill the spaces and cover the contents. Weigh a sufficient number of cans before and after filling to obtain an accurate idea of average net weight. On account of expansion

in processing, corn can be packed less full than other vegetables. These instructions do not cover the canning of corn for market. Mark the cans with a pencil or knife to show contents. Plan in advance and work rapidly. Let one person do the packing and another attend to the weighing. Do not allow filled cans to stand before adding liquor and exhausting. To do so will injure the product.

5. **Adding Brine, Sirup or Water.**—After adding to within $\frac{1}{4}$ -inch of top, shake the can gently to displace all air within it. Now clean and wipe the groove around the opening. Slip on the cap and weigh before sealing to be sure of having the required weight.

6. **Fluxing and Capping.**—Apply the flux carefully around the groove, making sure that none of it enters the can. Use a small brush or card, or little mop made by tying a piece of clean white cloth around the end of a small stick. The flux is used to make the solder adhere to the tin. Apply the clean, hot capping steel, holding the cap in place with the center rod, while you lower the steel, turn it steadily until the solder flows. Hold the rod firmly and lift steel with a sudden twist to swing the melted solder around the groove evenly.

7. **Exhausting.**—Place the cans in trays and lower into boiling water to within one inch of the top to drive the air out of the cans. Let them stay in the shortest possible time necessary to drive out the air. Ordinarily three minutes is enough, and the temperature need not again reach boiling before cans are taken out. Frequently exhausting is done at 180 degrees F. Exhausting is necessary. If omitted, the air left in the can expands, causing it to bulge. The can may not resume normal shape again, or if it does and is exposed to a warmer temperature it may again expand, giving the appearance of a "swell." This will not only prevent sale of that can, but may also cut off future orders. Furthermore, the presence of air may cause the tin to dissolve more rapidly and enter into the food. Exhausting is required where the 4-H Brand label is used.

8. **Tipping.**—Close the small hole in top of the can immediately after exhausting. Apply flux as for capping, and use a little wire solder to close the hole. Hold the solder with left hand near the hole and barely touch the hot copper to it, so that only a bead will drop and cover the hole. This makes a neat tip.

9. **Processing.**—Boil the cans which have been exhausted and tipped to sterilize the contents. Have the water boiling vigorously when the cans go in. Lower the cans slowly under the water and look out for any showers of bubbles from a can. These show that it leaks at the point from which the bubbles come and must be taken out and resoldered. Begin counting time

when the water first boils after immersing the cans. Keep it boiling constantly. In intermittent processing, the vegetable is processed for one hour on each of three successive days. The time is sometimes reduced to two days with very young string beans and some other more easily sterilized vegetables. It is not possible to state the shortest time which may be used safely because of the varying conditions.

10. **Cooling.**—Cool all canned products as quickly as possible to stop the cooking, which breaks down and injures the flavor and color. Plunge the cans into very cold water immediately, especially when processing intermittently. Never stack cans close together until entirely cold.

11. **Labeling.**—After 8 to 10 days, or immediately before selling, label all cans. Place the sealed end down so that the opposite end will appear at the top when placed on the shelf. Use a rather dry paste and put it only on the end of the label so that no paste will touch the tin. If paste touches the can, it may cause rust. Where a damp climate causes cans to rust easily, the outside of the can may be lacquered before being labeled. Club members may use the 4-H Brand label only on first class goods. They must put net weight in pounds and ounces and packer's name and address on each can. Every girl thus guarantees her own goods.

QUESTION

1. How many steps are required in canning in tin?
2. What is done in the first step? Second step?
3. What is meant by "blanching" and how is it done?
Why?
4. What care must be used in packing, and how should the weight of the contents be shown?
5. How full should the can be before adding brine?
6. Describe how to apply the flux?
7. Describe the process of packing.
8. What is meant by "exhausting" and how is it done?
Why?
9. What is meant by "tipping" and how is it done?
10. What is meant by "processing?" What is meant by "intermittent processing?"
11. Why is it necessary to cool the canned products quickly, and what is a good way?
12. On what kind of a pack should the 4-H Brand label be placed?

Note.—The above questions, with many others, should be brought out while performing the actual operation of canning. Why not have the pupils to make a home-made canner and bring in samples of fruits and vegetables to be canned?

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Lesson No. 11.—Canning Club.

BRINING AND SEASONING.

(From State's Relation Bulletin No. A-87.)

Brine, sirup, or water are added immediately after packing to such fruits and vegetables as need to be surrounded by a liquid either for proper preparation or for purpose of sterilization. No more liquor is allowed than is actually necessary to cover the contents after as full a pack as possible is made. All 4-H Brand tomatoes have a mixture of sugar and salt added. Mix this in the proportions of one-third salt and two-thirds sugar and put two level teaspoonfuls in each No. 3 can of tomatoes and one teaspoonful in each No. 2 can. Use this for peas, lima beans and corn. It is required that all products to be sold be packed with sirup or brine indicated, so as to come up to the standard. The flavor of the product is much superior to those without sugar or salt. In canning tomatoes, no addition of tomato juice in excess of the amount present in the tomatoes canned is allowed. Any water is considered an adulteration. In canning tomatoes in glass for exhibits and home use, when it is desirable to keep the tomatoes whole, they may be packed carefully and a thick liquor poured over them. This may be obtained by cooking smaller or broken tomatoes and putting through a sieve. Brine for beans, okra, cauliflower, etc., should contain $2\frac{1}{2}$ ounces salt to a gallon of water. For asparagus a heavier brine, 4 ounces to a gallon of water, is needed.

STANDARDS FOR 4-H BRAND CANNED VEGETABLES.

Tomatoes.—Cans to contain not less than 2 pounds 1 ounce tomatoes in No. 3 and not less than 1 pound 4 ounces tomatoes in No. 2. To be filled with sound, ripe fruit, carefully peeled and cored; tomatoes to be whole or in large pieces, firm, uniformly red, and of good flavor.

Tomatoes and Green Pepper.—Cans to contain not less than 2 pounds packed in No. 3 cans. For this pack add 1 medium size green sweet pepper, after removing the stem and seeds, to each can tomatoes.

String Beans.—Net weight in No. 3 can before liquor is added at least 1 pound 8 ounces, brine 8 to 10 ounces. Net weight No. 2, 13 ounces beans and about 8 ounces liquor. Beans to be tender, green, uniform in size, well strung and of good flavor. Liquor clear. The net weight which appears on label should be No. 3, 2 pounds, for No. 2, 1 pound 5 ounces.

Peas.—No. 2 cans to have at least $13\frac{1}{2}$ ounces net weight of peas and about $8\frac{1}{2}$ ounces liquor—peas to be fairly uniform in size, tender, whole, and of good flavor; liquor clear. Net weight appearing on label should be for No. 2 cans, 1 pound 8 ounces.

Baby Beets.—To be packed in No. 2 lacquered tins, about 30 baby beets to each can, maximum size $1\frac{1}{2}$ inches in diameter and average size 1 inch in diameter. No. 2 can to have at least 16 ounces whole beets and 4 ounces liquid. Net weight on label should be for No. 2 can 1 pound 4 ounces.

Okra.—Net weight of contents in No. 3 can should appear on label 2 pounds. Only young, tender okra should be packed, and it is best to simply remove the cap without cutting into the seed pod and pack it whole. Brine is added as explained in the table.

Peppers.—No. 2 cans to contain between 8 and 10 whole peppers. Flat No. 1 cans to contain 4 or 5 whole peppers and net weight of contents appearing on the label should be for No. 2 can not less than 1 pound, or flat No. 1 can not less than 8 ounces.

Soup Mixture.—This should consist of a mixture which is made in the proportion of one-half tomato pulp, one-fourth corn or tiny lima beans, and one-fourth okra with seasoning added. One slice of onion 2 inches in diameter should be added to each No. 2 can. The tomatoes should be heated, rubbed through a sieve and cooked down to about the consistency of ketchup before measuring; then the corn, okra, onion, and seasoning should be added and cooked until the corn and okra are about three-fourths done. Then pack into cans and follow directions as given in the table in lesson 12. Net weight of contents appearing on label of No. 2 can should be 1 pound $4\frac{1}{2}$ ounces.

QUESTIONS.

1. For what purpose is brine, sirup or water added?
2. Describe how the sirup is made and how the brine is made.
3. Name the standard weights for the 4-II Brand for tomatoes, beans, peas, baby beets, okra, peppers, soup mixtures.

Lesson No. 12.—Canning Club.

PREPARATION FOR CANNING IN GLASS.

(From States Relation Service Bulletin No. A-81.)

Jars.—The glass top jar with wire clamp is the best type of jar for use in intermittent processing. If products are to be sold, a good commercial jar is necessary. Commercial jars when purchased in gross quantities are cheaper than household jars and can be chosen in appropriate size for each product. A 10 or 12 ounce jar with glass top and screw rim can be effectively used for preserves, jams, pickles, etc. Another good type of commercial jar is one with hermetic cap and can be had in different sizes for various products. A 4 ounce size is suitable for individual service, a 10 ounce size

for general use. Assemble all supplies and utensils such as jars, new rubbers and lids, wooden spoons, paddles, one-half pint measuring cup, measuring spoons, paring knives, sugar, salt, soda, etc., in a clean convenient place in which to work.

STEPS TO BE TAKEN IN CANNING IN GLASS.

The steps, 1, 2 and 3 under "Canning in Tin" are also to be followed when packing in glass. Sterilize jars by placing them in a vessel, side down, covering with cold water, bringing to a boil and boiling for 15 minutes.

4. **Packing.**—After selecting fruit or vegetables for uniformity in size and quality (see score) it should be arranged with reference to symmetry and the best use of the space within the jar. In placing the fruit or vegetables in a jar, a thin, slender, flexible paddle made out of cane is useful. This paddle is also used to take out the bubbles of air by running it down the side of the jar to touch these bubbles after the liquor has been added to the pack.

5. **Adjusting the Cap.**—Before placing the cap be sure that the rubber is flattened in its groove, without the presence of any seed or particle of the fruit. When a screw-top jar is used, screw the cap evenly about half way. When a glass top jar with wire clamp is used, place the lid on evenly and raise both clamps up, the upper one fastened to hold the lid in place. With a hermetic jar, fasten the cap on the jar evenly with the clamp. This type of jar is self-sealing as it cools.

6. **Processing.**—Place the jars in a water bath on a rack (a wooden one is good) to avoid breaking. Have the water the same temperature as the contents, letting it come to within 2 inches of the top of jars. Have a tight cover for the vessel to keep in the steam. Do not count time until the water begins to boil; keep it boiling steadily for the time required. Seal the jars air tight promptly at end of processing and remove them from the bath, being careful not to allow a cold draft to strike them. In intermittent processing, raise the clamp of each jar at the beginning of each processing to allow for expansion. Seal at close of each processing. The hermetic jar is not a suitable one for intermittent processing.

7. **Labeling.**—Before labeling, wash and polish each jar. Place the label on the plain side of the jar midway between the seams one-fourth inch from the lower edge. On every label must appear the name of the contents, name and address of the packer, and net weight in pounds and ounces.

8. **Store products** in a cool, dry, dark place.

STANDARDS FOR 4-H BRAND CANNED FRUITS.

Figs.—The net weight contents of a No. 2 enamel-lined can of figs should, as shown on the label, be not less than 1 pound

6 ounces. Figs should remain whole and a No. 2 can should contain about 30 to 35 whole figs.

Peaches.—A No. 3 can should have at least 1 pound 5 ounces solids and 11 ounces liquid, should contain between 10 and 12 halves of peaches, and the net weight of contents appearing on label should be not less than 2 pounds.

Pears.—The net weight in a No. 3 can should be not less than 2 pounds, having 11 ounces liquid, 1 pound 5 ounces solids and between 12 and 14 halves.

Berries.—The net weight of a No. 3 can of blackberries or raspberries should be 2 pounds. Of a No. 2 can, 1 pound 6 ounces, whole berries weighing about one-half of total in each can. The berries should be large, whole, and of good color and flavor. The sirup used in packing must be made out of strained berry juice and sugar with no water added. Enamel-lined cans should always be used.

QUESTIONS.

1. What kind of jars are best for canning in glass?
2. What should be done in getting ready to can in glass?
3. What steps in canning in tin are also taken in canning in glass?
4. Should more care be exercised in packing in glass than in tin?
5. What care should be exercised in adjusting the cap?
6. How is "processing" done in canning in glass?
7. Is there danger in breaking the jars in canning in glass by the hot water method?
8. May the glass jar be used in the intermittent processing?
9. What care should be taken in showing the products that are canned in glass?
10. What are the standard weights of the 4-H Brand of peaches pears and berries, in the No. 3 cans.

Lesson No. 13.—Canning Club.

CANNING PEPPERS.

(U. S. Department of Agriculture Bulletin No. 782.)

The fruits of the mild-flavored varieties of Spanish peppers (used in canned pimentos) differ from the ordinary sweet bell pepper in that they have a much thicker meat, a very tough skin, and are smooth in contour, being comparatively free from ridges. These peppers upon being heated develop a juice which when mixed with water makes an unpleasant slimy mixture. For this reason no water is used in their preparation for salads or in canning. The peppers should be picked in the early morning and handled carefully, to prevent bruising. This can be done by placing them in shallow trays, from which they can

CANNING VEGETABLES (HOT-WATER PROCESS.)

Do not attempt to use this table without reading all directions carefully.

Vegetable.	Blanch, minutes.	Liquor.	In tin.			In glass.		
			No. of cans.	Exhaust, minutes.	Process.	Jar.	Process.	
Asparagus	3 to 4	Brine (heavy)	2	3	Intermittent or 2 hours	Pint	Intermittent or 2 hours continuous.	
String beans	3 to 8	Brine	2	3	Intermittent	do	Do.	
Do		do	2	3	do	Quart	Intermittent.	
Lima beans	2 to 5	salt, sugar, water	2	3	do	do	Do.	
Beets	Cook $\frac{3}{4}$ done, peel.	Brine	2	3	1 to 2 hours	do	1½ to 2 hours.	
Carrots	Cook $\frac{3}{4}$ done, scrape	do	2	3	1 hour	do	1 hour.	
Corn	1 to 3 (blanch on cob).	salt, sugar, water	2	10	Intermittent	do	Intermittent.	
Okra	10 to 15	Brine	2	3	do	Pint and quart	Do.	
Peas (very young)	1 to 3	salt, sugar, water	2	3	45 minutes first day, 35 minutes second and third day.	Pint	Same as No. 2.	
Peas, medium	3 to 8	do	2	3	Intermittent	do	Intermittent.	
Potato, sweet	Cook $\frac{3}{4}$ done, peel	Pack dry	2	15	3 hours	Quart	3 hours.	
Rhubarb		Cold water	2	2	15 minutes	do	15 minutes.	
Soup mixture.		Salt, sugar	2	2	2 hours or intermittent	do	2 hours or intermittent.	
Tomato		do	2	2	20 minutes	Pint	15 minutes.	
Do		do	2	3	30 minutes	Quart	30 minutes.	

NOTE.—String beans packed in No. 2 cans are preferable because more surely sterilized.

Corn, Lima beans, and peas should never be packed in large container than No. 2 and processed always intermittently. Corn is cut from cob after blanching.

Soup mixture containing corn and lima beans should always be processed intermittently.

The brine used is made of $2\frac{1}{2}$ ounces salt to 1 gallon of water, except for asparagus, which contains 4 ounces to 1 gallon. Beets and rhubarb when packed in tin must be put in enamel-lined cans.

CANNING FRUITS (HOT-WATER PROCESS.)

Fruit.	Blanch	Sirup	In tin.		In glass.	
			No. of can.	Exhaust, minutes.	Process, minutes.	Jar.
Apples.....	1 minute.....	No. 1.....	3	1	8	Quart
Berries.....	.....	No. 3.....	2	1	10	do
Cherries, sweet.....	15 seconds.....	do.....	2	1	20	do
Cherries, sour.....	do.....	No. 4.....	2	1	20	do
Currants.....	.....	No. 3.....	2	1	15	do
Figs.....	Soda Blanch.....	do.....	2	1	25	do
Gooseberries.....	.....	do.....	2	1	30	do
Grapes.....	.....	do.....	2	1	20	do
Guava.....	15 seconds.....	No. 4.....	2	1	15	do
.....	do.....	.....	3	3	20	do
May haw.....	.....	No. 3.....	3	3	25	Pint
Peaches.....	15 seconds.....	No. 4.....	3	3	20	Quart
Pears.....	do.....	No. 3.....	3	3	15	do
Plums.....	Prick with needle.....	No. 1.....	3	3	20	do
					12	do

NOTE. Berries, cherries, currants, figs, gooseberries, May haws, and plums when packed in tin must be put in enamel-lined cans. To make the sirups recommended, boil sugar and water together in the proportion given below until sugar is dissolved. Strain all impurities out of the sirup before using:

- Sirup No. 1, use 14 ounces to 1 gallon water.
- Sirup No. 2, use 1 pound 14 ounces to 1 gallon water.
- Sirup No. 3, use 3 pounds 9 ounces to 1 gallon water.
- Sirup No. 4, use 5 pounds 8 ounces to 1 gallon water.
- Sirup No. 5, use 6 pounds 13 ounces to 1 gallon water.

The sirup for canned berries is made out of berry juice instead of water.

be easily sorted. The medium sized, uniformly sound peppers should be canned whole. The irregular, broken ones, must be cut into strips and canned or used in relishes, sauces or soup mixtures.

STANDARD PACKING IN TINS.

Select sound, uniform peppers of medium size. To remove seeds, cut around the stem of each with a slender paring knife and remove inside partitions. To peel, place the peppers in a hot oven from 6 to 10 minutes (until the skin blisters and cracks), being careful not to allow them to burn. Then remove the skin with a slender paring knife. Flatten the peppers and pack in horizontal layers. Place whole, uniform peppers in the cans, putting 4 peppers into the flat No. 1 can and 8 into the No. 2 can. This number makes the standard pack, the net weight of which should not be less than 1 pound in a No. 2 can and 8 ounces in a flat No. 1 can. The peppers should be selected so as to fill the cans. No liquid is used. The processing brings out of the peppers a thick liquor, which almost covers them in the can or jar. Cap and exhaust flat No. 1 can for 2 minutes and No. 2 cans for 3 minutes. Tip and process in hot water at boiling temperature, the flat No. 1 cans for 15 minutes, the No. 2 cans for 25 minutes.

STANDARD PACKING IN GLASS.

Prepare the peppers as for packing in tin. For the 4-H Brand package use a 10-ounce tumbler-shaped glass jar with hermetic cap. This jar should contain, packed in flattened horizontal layers, six whole peppers. The jar should be well filled and in some cases seven peppers may be necessary for a full pack. Cap, clamp and process for 20 minutes. Do not remove the clamp until the jar is thoroughly cold. The strips and cubes cut from irregular and broken peppers may be packed in pints and quarts for home use. Process pint jars for 20 minutes and quart jars for 30 minutes. The best way to chop the vegetable ingredients uniformly is to put them through a food chopper.

DIXIE RELISH.

1 qt. chopped cabbage	4 tblsps. mustard seed.
1 pt. chopped white onion	2 tblsps. celery seed (crushed.)
1 pt. chopped sweet red pepper	$\frac{3}{4}$ cup sugar.
1 pt. chopped sweet green pepper	1 qt. vinegar.
	5 tablespoonfuls salt.

Soak the pepper in brine (1 cup salt to 1 gallon water) for 24 hours. Freshen in clear cold water for one or two hours. Drain well. Remove seeds and coarse white sections. Chop separately and measure the chopped cabbage, peppers and onions before mixing. Add spices, sugar and vinegar. Let stand over night covered in a crock or enameled vessel. Pack in small

jars. The standard pack will be in a vase-shaped 10-ounce hermetic jar. When ready to pack drain the vinegar off the relish, in order that the jar may be well packed. Pack the relish in the jars, pressing it carefully, then pour over it the vinegar which was drained off. Paddle the jars thoroughly to get every bubble out and allow the vinegar to displace all air spaces. Garnish each jar with two quarter-inch pointed strips of red pepper 3 inches long. Place these strips vertically on opposite sides of the seams of the jar. Cap, clamp and process for 10 minutes at boiling temperature.

CREOLE SAUCE.

- 1 pint tomato sauce (about consistency of ketchup.)
 - 1 cup green pepper (cut in 1 inch cubes or strips.)
 - ½ cup red pepper (cut in 1 inch cubes or strips.)
 - 1 tablespoonful celery seed (crushed.)
 - ½ tablespoon minced parsnips.
 - 2 tablespoonfuls chopped onions.
 - 1 tablespoonful sugar.
 - 1 tablespoonful butter.
 - 1 bay leaf.
 - 4 tablespoonfuls minced ham or bacon.
- Season with salt and pepper.

Make tomato sauce by first cooking the tomatoes and putting them through a sieve. Cook the pulp until about the consistency of ketchup. Chop the onions and fry in the butter until yellow. Add the pepper, tomato sauce, ham and seasoning and simmer for half an hour. Serve hot. This creole sauce can be used in omelets, rice croquettes, veal, lamb, boiled or baked fish, in soup, and with creole chicken. When the creole sauce is to be canned, omit the ham or bacon, and simmer only 15 minutes. Process in 10 ounce glass jars for 20 minutes in a water bath at boiling temperature.

GREEN PEPPER AND CHEESE SALAD.

Select and wash three medium sized green peppers. Cut around the stem of each with a slender paring knife to remove the seed and white sections. Stuff the inside of the peppers with cottage cheese, pressing it in firmly. Chill and when ready for use, cut the pepper into quarter inch slices and place two or three of these slices in a nest of tender lettuce. Serve with a salad dressing.

COMBINATION SALAD.

- ½ cup chopped green pepper.
- ½ cup chopped red pepper.
- ¼ cup chopped onions.
- 1 cup tomatoes cut in pieces.
- ¼ cup sliced cucumbers.

Chop separately, measure, mix and serve in a bed of shredded tender lettuce and serve with a French salad dressing.

SWEET RED PEPPER AND LETTUCE SALAD.

A very good salad can be made by using small leaves of head lettuce with strips of bright red sweet pepper. This salad is especially attractive when served with a small cheese ball on each plate. Roll the cheese into balls about the size of a walnut. These cheese balls may be made of cottage cheese or pimento cheese.

Cottage Cheese.—Take fresh clabber before it loses its best flavor by becoming too sour. Heat slowly until barely hot enough to separate the curd from the whey. This takes place much below the boiling point. Pour into a thin cloth bag and allow to drip for one or two hours. Turn the curd into a bowl and season with salt and pepper. Add one-half cup cream to about 1 pint of dry curd and mix thoroughly.

Pimento Cheese.—Chop finely two or three medium sized ripe pimentos which have been baked until tender and peeled. 10 pimentos may be used. The peppers should be soft enough to make a smooth mixture. Cream the pimentos and curd together until a smooth mixture is obtained. This cheese may be used for a sandwich filling, for cheese balls and also for the stuffing in the green pepper and cheese salad.

PIMENTO AND COTTAGE CHEESE ROAST.

- 2 cupfuls cooked lima beans.
- $\frac{1}{4}$ pound cottage cheese.
- 3 canned pimentos chopped.
- Bread crumbs and salt.

Put the first three ingredients through a meat chopper. Mix thoroughly and add bread crumbs until it is stiff enough to form into a roll. Brown in the oven, basting occasionally with butter and other fat and water.

Lesson No. 14.—Canning Club.

PRESERVING.

(From State's Relation Bulletin No. A-81.)

These recipes are prepared for advanced club members who are ready to begin work in preserving. In order to secure the uniform products required for market, it is necessary to have some special equipment. Good enamel or aluminum vessels, scales, measuring cups, wooden spoons and paddles, thermometers and saccharometer are needed.

In making preserves, the object is to have the fruit permeated with sirup. Care must be taken to do this gradually so as to prevent shrinking and toughening which results when fruit is

placed at once in very dense sirup. It is also important not to pack the finished preserves in sirup heavy enough to crystalize later. To insure accurate and uniform results, test with a saccharometer the density of all sirups used in packing preserves. A 250-centimeter glass cylinder or other tall slender vessel is needed to hold the sirup in which the saccharometer is floated. The degrees of density used in these recipes are those indicated by Balling of Brix saccharometers. Process preserves or jam in 12 ounce or pint jars, 20 minutes at 180 degrees F. (simmering.) When jars with glass top and screw cap or wire clamp (lightning seal) are used, tighten cap immediately at end of processing. When hermetic jars are used, leave clamp on cap until jar is entirely cold. Measurements level.

PRESERVED BERRIES.

Practically the same methods are to be followed in preserving and making jams of all berries. Berries should be gathered in shallow trays or baskets and not in deep vessels which allow them to be bruised and crushed. They should be uniform, ripe and sound. Select only large, firm berries for preserving; those for jam may contain the smaller and broken ones. All berries should be carefully sorted and lightly washed by placing in a colander and pouring water over them rather than putting them into a pan of water.

To retain the best possible color and flavor, sirup for preserved berries should be made of berry juice obtained by crushing, heating and straining the softer broken berries. Add 1 pint of sugar to each pint of berry juice and allow to boil 10 minutes. Weigh the choice, perfect berries after removing the caps or stems and allow 1 pound of sugar extra for each pound of whole berries. Add the extra sugar to the sirup, bring to a boil and skim. Remove from the fire and cool sirup before dropping the berries into it to prevent shriveling and toughening the fruit. Place over the fire and bring slowly to a boil and simmer until the berries are heated through, being very careful not to overcook; the berries should remain whole. Lift the berries from the sirup and place carefully into shallow pans. Pour sirup over them and allow to stand over night. Pack cold, filling the jar with berries before pouring the sirup over them. Cap, process and seal. The preserves may be packed hot, after removing from the fire, capped and processed immediately. The sirup in which berry preserves are packed should have density of 50 to 55 degrees and will often need to be boiled down to this density after removing berries.

JAM.

In selecting berries for jam, the ripe broken ones suggested above will give fine color and flavor, but at the same time there

should always be about one-half the quantity which are slightly underripe. This is necessary to give a jelly like consistency to the product. Cooking in small quantities also helps to retain color and flavor. Weigh the berries and allow $\frac{3}{4}$ -pound sugar to each pound of fruit. Rapid cooking with constant care is essential. In stirring jam use a wooden spoon or paddle, moving it across the center of the vessel first one way and then the opposite and next around the pan, gently moving the mixture from the bottom of the pan, being careful not to stir rapidly or heat. Cook the jam to 220 degrees F. When finished it will give the same test as required from finished jelly, that is, when a little is held a moment cooled in a spoon and allowed to drop from the side of the spoon it will not pour, but will fall in a sheet or flake.

Lesson No. 15.—Canning Club.

PRESERVED FIGS.

(From State's Relation Bulletin No. A-81.)

6 quarts figs. 2 quarts sugar. 3 quarts water.

Select firm, sound fruit, discard all overripe or broken figs. Sprinkle 1 cup of soda over the selected figs and cover with about 6 quarts of boiling water. Allow to stand 15 minutes, drain off this soda solution and rinse the figs well through two baths of clear cold water. Let the figs drain while sirup is prepared. Mix sugar and water, boil 10 minutes and skim. Add well drained figs gradually so as not to cool the sirup. Cook rapidly until figs are clear and tender, (about 2 hours.) When the figs are transparent, lift them out carefully and place in shallow pans. If the sirup is heavy enough (about 50 degrees) continue boiling until it reaches this density, then pour it over the figs, being careful to see that the fruit is entirely covered. Let stand over night. Next morning pack the figs cold into sterilized jars, having stems all the same length and placing the figs so that all stems will be upward. Fill each jar to overflowing with the sirup testing 55 degrees. Cap, clamp, process and seal immediately.

FIG MARMALADE.

Select very ripe figs, remove all stems, treat them with scalding soda solution and rinse thoroughly as in preserving. Cook in quantities not larger than 3 pounds at a time. Allow $1\frac{1}{2}$ pounds sugar to each 3 pounds of figs. Add barely enough water to start the cooking (about one-half cup) crush the figs, heat to boiling and add the sugar. Cook rapidly to 220 degrees following instructions given in berry jam. Pack and process like preserves.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

PRESERVED WATERMELON RIND.

Cut 1 pound rind into 1 inch squares. Remove peel and all pink part. Soak over night in limewater (1 ounce lime to 2 quarts water.) The following morning let stand for 2 hours in clear water. Drain well then drop into boiling water and boil rapidly for 10 minutes. Drain again and add gradually to the sirup (made by boiling 3 cups sugar, 3 pints water). Add to this the juice of one-half lemon and three extra slices of lemon. Cook until the melon is tender and transparent. Allow to stand until cold, arrange the pieces attractively in the jar, garnishing with a slice of lemon. Cover with the sirup testing 50 to 55 degrees. Process and seal.

GINGERED WATERMELON RIND.

Follow the same method as for preserves until after rind has been freshened in cold water. Then drain well and boil rapidly for 15 minutes in strong ginger tea (1 ounce ginger to 1 quart water.) Finish cooking in a 30 degree sirup made by using 1 pint strained ginger tea with 1 quart water and 1½ pounds sugar. Cook rapidly until tender and transparent (about 2 hours.) After rind has boiled for one-half hour, add one-half lemon, cut into thin slices. Pack and process like preserves.

PEACH MARMALADE.

2¼ pounds peaches cut into small pieces.

1 pound sugar.

6 whole allspice.

1 cracked peach seed.

1 inch ginger root.

½ cup peach juice.

½ teaspoon whole cloves.

1 teaspoon cinnamon bark.

1 teaspoon sprig mace.

(Tie spices in cheesecloth bag.)

Cook together until thick as marmalade and clear (to 220 degrees F.) Pack hot in hot jars and seal at once. If this is done quickly, having everything very hot, a good seal should result. However, when packing for market, it is safer to process this jam both to insure sterilization and a tight seal.

GINGERED PEARS.

Use pears not quite ripe, peel, core and cut in thin slices. To 8 pounds of pears, allow 8 pounds sugar, 1 cup of water, juice of 4 lemons. Cut the lemon rinds into thin strips and add them. Also add ⅓ pound of ginger root cut into pieces. Simmer until thick as marmalade. Pack like peach jam.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Lesson No. 16.—Canning Club.

PICKLING.

(From State's Relation Bulletin No. A-81.)

These recipes have been prepared for uniform 4-II Brand pickles and ketchup. Brine in which vegetables stand for a brief time is about 45 per cent. (1 cup salt to 1 gallon water.) If vegetables are to be brined for several months it is necessary to use a salt per cent scale.

TOMATO KETCHUP.

Select red ripe tomatoes. The extra juice, small and broken fruit, which will not do for canning may be used if they are sound and red. Any green or yellowish parts of fruit will make a ketchup inferior in flavor and color and not good for market. Use whole spices tied loosely in a bag while cooking and remove before bottling to prevent darkening the product caused by ground spices. This does not apply to red pepper, which helps to give a bright, red color. The pulp of sweet Spanish pepper or the ground Hungarian paprica may also be used to give color and flavor. Remove seeds from sweet red pepper, chop and add 1 cup of this pepper and 2 medium size onions to 1 gallon tomatoes before cooking. Cook the tomatoes thoroughly, put through a colander or sieve, saving all pulp, and measure. For every gallon of pulp use the following:

2 tablespoons salt.

4 tablespoons sugar.

1 tablespoon mustard (powdered.)

1 pint good vinegar.

1 level tablespoon whole allspice.

Cloves, cinnamon and pepper.

2 small red peppers sliced and seed removed.

After putting tomatoes through a colander add ground spices and spice bag and cook for 1½ hours, or until nearly thick enough, then add vinegar and cook until thick. Rapid cooking (being careful not to scorch the ketchup) will give a better color than slow cooking. The finished product should be a fine, bright red. Pour the ketchup at once into hot sterilized bottles. If any quantity is made for sale, set the hot bottles at once in a vessel of hot water, having a false bottom in it to prevent breakage, put the cork stoppers in loosely and process at boiling point for 30 minutes. Drive the corks in tightly and when cool dip mouth of bottle into melted paraffin, or cover with sealing wax.

MUSTARD PICKLE.

Vegetables.

1 pint whole small cucumbers.

1 pint sliced cucumbers.

1 pint small whole onions.

- 1 cup beans.
- 3 green sweet peppers.
- 3 red sweet peppers.
- 1 pint green fig tomatoes, or 1 pint cauliflower.
- 1 quart vinegar.
- 4 tablespoons flour.
- 1 cup sugar.
- 3 tablespoons powdered mustard.
- $\frac{1}{2}$ tablespoon turmeric.
- 1 tablespoon celery seed.

Cut all vegetables before measuring, tomatoes into halves, cucumbers into slices, string beans into $1\frac{1}{2}$ -inch lengths, diagonally or on the bias, and chop peppers. All vegetables should be tender, and the whole cucumbers not longer than $2\frac{1}{2}$ inches. Put all vegetables into brine over night then freshen in clear water for 2 hours. Let these vegetables stand in liquor of one half vinegar and one-half water for 15 minutes, then scald in same liquor. To make mustard dressing, rub all the dry ingredients together until smooth then add the hot vinegar slowly, stirring to make smooth paste. Cook over pan of water, stirring carefully until the sauce thickens. Then drain the vegetables thoroughly and pour the mustard dressing over them while hot. Mix well and pack in sterilized jars. Process 10-ounce jars for 20 minutes at 180 degrees F. (simmering.)

Lesson No. 17.—Canning Club.

SPICED CUCUMBER SALAD.

(From State's Relation Bulletin No. A-81.)

Vegetables.

5 pounds sliced cucumbers (about 2 dozen.)

$\frac{1}{2}$ cup chopped onion.

2 cups chopped sweet red pepper.

1 cup chopped sweet green pepper.

Spiced vinegar.

1 quart vinegar.

$\frac{1}{2}$ cup sugar.

1 tablespoonful each, powdered ginger, and mustard seed.

2 tablespoons celery seed (crushed.)

1 tablespoonful each whole peppers, cloves, cinnamon and allspice.

Mix the cucumber and onions and sprinkle alternate layers with salt, using $\frac{3}{4}$ cup for whole. Let stand over night. Put peppers into brine over night. Next morning drain vegetables and freshen for one to two hours in clear water. Put all whole spices into cheese cloth bag, except the celery seed and mustard seed, which are put in loose. Add spices to the vinegar and boil

for five minutes. Drain the vegetables well and pour the hot spices and vinegar over them. Let stand for 24 hours. Pack, distributing the pepper well, and flattening some of the cucumber slices against the face of each jar. Fill jars with same vinegar and paddle well to remove all bubbles. Garnish with strips of red pepper or pieces of spice. Process 12 ounces or pint jars for 15 minutes at 180 degrees F.

PICKLED ONIONS.

Select small white onions and sort into 2 sizes. One-half inch diameter in one and $\frac{3}{4}$ -inch in another. Peel, cover with fresh water and let stand for 2 days, changing the water on the second day. Wash well and put into brine for four days, changing brine at the end of second day. Take out of brine and put into boiling water. Let stand for 10 minutes then put into cold water for 2 hours drain and pack into jars, putting in a few small red peppers and garnishing with sprigs of mace. Fill jars to overflowing with spiced vinegar made previously and allow to stand for a few days with spice bags left in it. Process as for pickles.

SPICED VINEGAR.

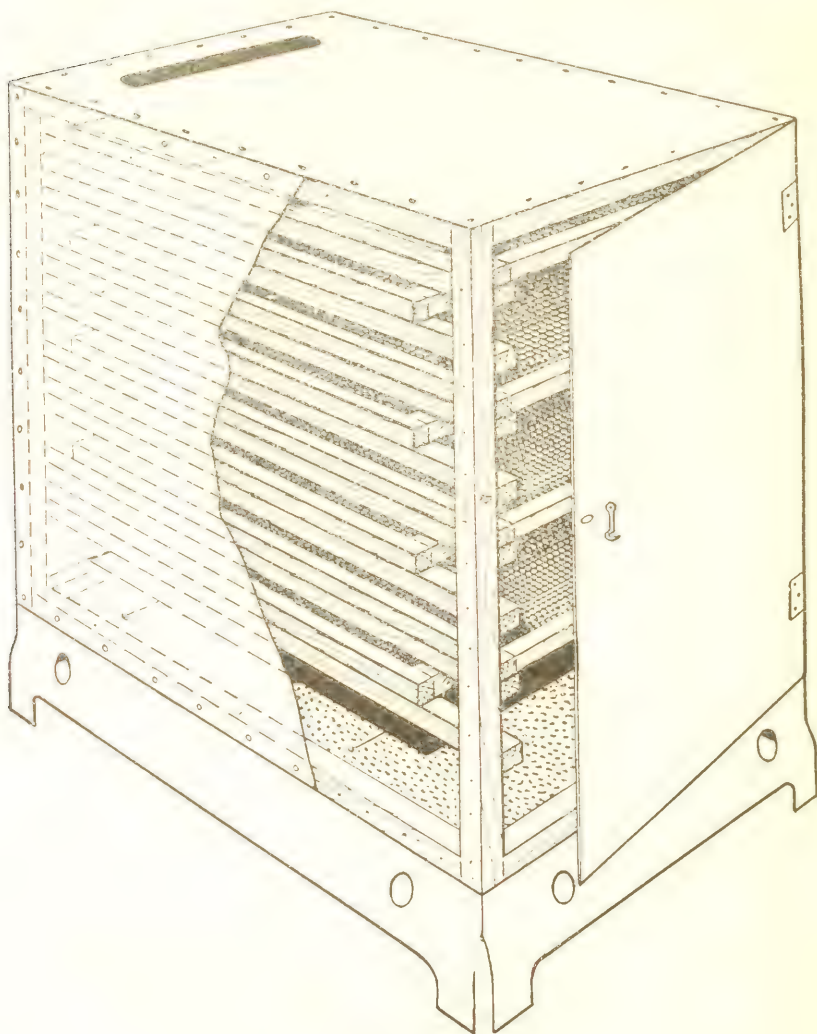
$\frac{1}{2}$ gallon vinegar.
 $1\frac{1}{2}$ tablespoons celery seed.
 $\frac{1}{2}$ cup grated horseradish.
 1 cup sugar.
 $1\frac{1}{2}$ tablespoons mustard seed.
 1 tablespoon salt.
 1 tablespoon cinnamon.
 Cloves, nutmeg and grated onion may be added if desired.

GREEN TOMATO PICKLE.

1 gallon green tomatoes.
 $\frac{1}{2}$ dozen large onions.
 3 cups brown sugar.
 $\frac{1}{2}$ lemon.
 3 pods of red pepper.
 1 tablespoon whole black pepper.
 1 tablespoon whole cloves.
 1 tablespoon whole allspice.
 1 tablespoon celery seed (crushed.)
 1 tablespoon mustard seed.
 1 tablespoon ground mustard.

Slice the tomatoes and onions thin. Sprinkle over them $\frac{1}{2}$ cup salt and let stand overnight in a crock or enamel vessel. Tie the pepper, cloves, allspice and celery seed in a cheese cloth bag. Slice the lemon and slice 2 pepper pods very fine. Drain the totmato and onion well. Add all seasoning except one pepper pod to the vinegar, then add the tomato and onion. Cook

for $\frac{1}{2}$ hour, stirring gently at intervals to prevent burning. Remove spice bag to prevent darkening product. Pack in 10 ounce jars and garnish with slender strips of the red pepper, placing them vertically on the opposite sides of each jar. Process for 15 minutes.



Home-made Drier.

Lesson No. 18.—Canning Club.

DRYING OF VEGETABLES AND FRUITS FOR HOME USE.

(From State's Relation Bulletin No. A-88.)

Many vegetables and fruits, which often go to waste, can very easily be conserved for home use by a simple process of drying which can be done in the average home. Dried products require no outlay for expensive containers and can be stored almost indefinitely under proper conditions in relatively small space. 100 pounds of fresh vegetables will average ten pounds of the dried product. Vegetables and fruits, if properly dried, retain their natural flavor and food value and when properly cooked can be made into most attractive and wholesome dishes.

DRIERS OR EVAPORATORS.

Vegetables and fruits can be dried in an oven, in trays or racks over the kitchen stove, or in a specially constructed drier. There are small driers on the market which give satisfactory results. The small cookstove driers or evaporators are small oven-like structures, usually made of galvanized sheet iron or of wood and galvanized iron. They are of such a size that can be placed on the top of an ordinary wood or coal range, or a kerosene stove. These driers hold a series of small trays on which fruits or vegetables are placed after being prepared for drying. Portable outdoor evaporators are especially convenient when it is desired to dry as much as ten bushels of fruit or vegetables per day. They are usually constructed of wood except the parts in direct contact with the heater. The homemade dry kiln used in some sections of the country can be cheaply and easily made of brick and stone.

Homemade Cookstove Drier.—A drier that can be used on a wood or coal range or a kerosene stove can be easily and cheaply made. Dimensions: Base 24x16 inches; height 36 inches. A base 6 inches high is made of galvanized sheet iron. This base slightly flares toward the bottom and has two small openings for ventilation in each of the four sides. On the base rests a box-like frame made of 1 or 1½-inch strips of wood. The two sides are braced with 1¼-inch strips which serve as cleats on which the trays in the drier rest. These are placed at intervals of 3 inches. The frame is covered with tin or galvanized sheet iron, which is tacked to the wooden strips of the frame. Thin strips of wood may be used instead of tin or sheet iron. The door is fitted on small hinges and fastened with a thumb latch. It opens wide so that the trays can be easily removed. The bottom in the drier is made of a piece of perforated galvanized sheet iron. Two inches above the bottom is placed a solid sheet of galvanized iron 3 inches less in length and width than the bottom. This sheet rests on two wires

fastened to the sides of the drier. This prevents the direct heat from coming in contact with the product and serves as a radiator to more evenly spread the heat.

The first tray is placed three inches above the radiator. The trays rest on the cleats 3 inches apart. A drier of the given dimensions will hold eight trays. The frame of the tray is made of one-inch strips on which is tacked galvanized screen wire, which forms the bottom of the tray. The tray is 21x15 inches, making it 3 inches less in depth than the drier. The lowest tray when placed in the drier is pushed to the back, leaving the 3-inch space in the front. The next tray is placed even with the front, leaving a 3-inch space in the back. The other trays alternate in the same way. This permits the hot current of heated air to pass around and over the trays. A ventilator opening is left in the top of the drier through which the moist air may pass away.

The principle of construction is that currents of heated air pass over the product as well as up through it, gathering the moisture and passing away. The movement of the current of air induces a more rapid and uniform drying. The upper trays can be shifted to the lower part of the drier and the lower trays to the upper part as drying proceeds, so as to dry product uniformly throughout.

If drying is done in a cookstove oven, leave oven door ajar. Note temperature of oven often. Trays for use in the oven can be made by using a convenient sized piece of galvanized wire screen and bending up to the edge one or two inches.

QUESTIONS.

1. What is meant by drying fruits and vegetables?
2. Have you dried fruit? Vegetables?
3. What common ways are used in drying fruit?
4. Describe how to make a homemade drier.

Note to Teacher.—Have pupils bring materials and make drier at school.

Lesson No. 19.—Canning Club.

DRIED VEGETABLES.

(From State's Relation Bulletin No. A-88.)

Equally as great care should be given to the selection and preparation of vegetables for drying as for canning. To secure a fine quality of dried products, much depends upon having the vegetables absolutely fresh, young, tender and perfectly clean. Wash all vegetables and clean well. If steel knives are used in paring and cutting have them clean and bright so as not to discolor the vegetables.

After vegetables are prepared properly, they are blanched. The blanch gives a more thorough cleaning, removes the strong odor and flavor from certain kinds of vegetables and softens and loosens the fibre. This allows the moisture in the vegetable to evaporate more quickly and uniformly. It also quickly coagulates the albuminous matter in the vegetables which helps to mould in the natural flavors. Blanching consists of plunging the vegetable into boiling water for a short time. Use a wire basket or cheese cloth bag for this. After blanching the required number of minutes, drain well and remove surface moisture by placing vegetables between two towels or by exposing to the sun and air for a short time.

The vegetable thus prepared is spread in a thin layer on the trays of the drier. The temperature for drying should be rather low to prevent scorching the product. For most vegetables, after surface moisture is removed, begin drying at a temperature of 100 degrees F. Increase temperature gradually from 110 to 145 degrees and complete drying in two or three hours. The time required for drying vegetables varies; however, it can easily be determined by a little experience. The material should be stirred or turned several times during the drying in order to secure uniform product.

It is important to know the temperature of the heat in the drier and this cannot be determined very accurately except by using a thermometer. Inexpensive oven thermometers can be found on the market, or an ordinary chemical thermometer can be suspended in the drier. If a thermometer is not used, the greatest care should be given to the regulation of the heat. The temperature in the drier rises rather quickly and the product may scorch unless close attention is given.

Green String Beans.—All varieties of string beans can be dried. Wash and string the beans carefully. The very young and tender string beans can be dried whole. Those that are full grown should be cut in $\frac{1}{4}$ to 1 inch lengths with a vegetable slicer or sharp knife. It is better to cut beans than snap them. They are then put in a bag of cheese cloth, or in a wire basket and blanched in boiling water for 6 to 10 minutes, depending on the maturity of the bean. One-half teaspoon of soda may be added to each gallon of boiling water to help set the green color in the bean. Remove surface moisture according to directions given above. Young string beans dry 2 hours, more matured beans 3 hours. Begin drying at a temperature of 110 degrees F., and raise temperature gradually to 145 degrees. Wax beans are dried in the same manner as the green string beans.

Lima or Butter Beans.—Lima or butter beans can be shelled from the pod and dried. If gathered before maturity, when young

and tender, wash and blanch from 5 to 10 minutes. Length of time for blanching depends upon size and maturity of bean. Remove surface moisture and dry from 3 to 3½ hours at same temperature for string beans.

Dry Shelled Beans.—Different kinds of beans, after maturing and drying on the vines, can be treated as follows: Shell, wash and spread in thin layers on the trays of the drier and heat 10 minutes, beginning at 160 degrees and gradually raising the temperature to 180 degrees. This high temperature will destroy all insect eggs that might be in the beans. Cowpeas or any field pea can be treated in the same way. Cool and store carefully. It might be added that the heating of the bean or pea destroys its vitality and thus treated cannot be used for seed purposes.

Garden Peas.—When drying the very young and tender sugar peas use the pod also. Wash and cut in ¼-inch pieces, blanch in boiling water 6 minutes, remove surface moisture, and dry the same length of time and at the same temperature as string beans. It is not necessary to use soda when blanching peas. The garden pea, which has a non-edible pod, is shelled and blanched from 3 to 5 minutes. Remove surface moisture, spread in single layer on trays and dry from 3 to 3½ hours. Begin drying at 110 degrees, raise temperature very slowly in about 1½ hours to 145 degrees. Continue drying 1½ to 2 hours at 145 degrees.

Sweet Corn.—Select very young and tender corn and prepare at once after gathering. Boil or steam on the cob 8 to 10 minutes to set the milk. To improve flavor a teaspoon of salt to a gallon of water may be used. Drain well and cut corn from cob, using a very sharp and flexible knife. Cut grains fine, only half way down to the cob and scrape out the remainder of grain, being careful not to scrape off any of the chaff next to the cob. Dry from 3 to 4 hours at 110 to 145 degrees. When field corn is used, good plump roasting ear stage is the proper degree of ripeness. A pound of dried corn per dozen ears is an average yield. Corn may be dried in the sun. Dry in oven 10 to 15 minutes and finish drying in the sun. Sun drying is, of course, not satisfactory in moist weather and the dried product will be darker in color and not as attractive in appearance. When dried in the sun it should be heated in the oven before storing to kill insect eggs.

Carrots and Parsnips.—Clean, scrape or pare and slice in ½-inch slices. Blanch 6 minutes, remove surface moisture and dry 2½ to 3 hours. Begin drying at 110 and raise temperature gradually to 150 degrees. Kalarabi, celeraic and salsify are dried by the same method.

Onions and Leek.—Wash, peel and slice onions in $\frac{1}{8}$ to $\frac{1}{4}$ -inch slices. To avoid any unpleasantness, peel and slice, holding under water. Blanch in boiling water 5 minutes, remove surface moisture and dry $2\frac{1}{2}$ to 3 hours, beginning at 110 and raising temperature gradually to 140 degrees. Leek is cut in $\frac{1}{4}$ -inch strips and dried the same as onions.

Beets.—Boil the whole beets with skin until a little more than $\frac{3}{4}$ done. Oip in cold water, peel and slice in $\frac{1}{8}$ to $\frac{1}{4}$ -inch slices. Dry $2\frac{1}{2}$ to 3 hours at 110 to 150 degrees F.

Pumpkin and Squash.—Pare and cut in about $\frac{1}{4}$ -inch strips and blanch 3 minutes, remove surface moisture and dry slowly from 3 to 4 hours, raising temperature from 110 to 140 degrees. Celery cut in one inch strips is dried in the same way as pumpkin or squash.

Okra.—Wash, blanch 3 minutes in boiling soda water and dry 2 to 3 hours, at 110 to 140 degrees. Use $\frac{1}{2}$ teaspoon soda to a gallon of water. Dry young and small tender pods whole. Older pods should be cut in $\frac{1}{4}$ -inch slices. Small tender pods are sometimes strung on a string and hung over the stove to dry. If dried in that manner, heat in oven before storing.

Cabbage.—Cabbage is shredded or cut in strips a few inches long. Blanch 10 minutes, drain, remove surface moisture and dry 3 hours, at 110 to 145 degrees.

Cauliflower.—Clean, divide in small bunches, blanch 6 minutes and dry 3 to $3\frac{1}{2}$ hours at 110 to 145 degrees. Cauliflower will turn very dark when drying, but will regain part of color in soaking and cooking. Dried cauliflower is especially good in soups and omelets. For drying brussel sprouts treat like cauliflower and add pinch of soda to blanching water.

Peppers.—Peppers may be dried by splitting on one side, removing seed, drying in the air and finished in the drier at 140 degrees. A more satisfactory method is to place peppers in biscuit pan in oven and heat until skin blisters or steam peppers until skin softens. Peel, split in half, take out seed and dry at 110 to 140 degrees. In drying thick fleshed peppers like the pimento do not increase heat too quickly, but dry slowly and evenly. Small varieties of red peppers may be spread in the sun until wilted and the drying finished in the drier or they may be entirely dried in the sun.

Vegetable Soup Mixtures.—Each vegetable used in the soup mixture is prepared and dried separately. They are put together in proportions desired, the desired flavored vegetables predominating. A combination of several vegetables makes a most desirable soup mixture. Those most often used are carrots, cabbage, onions, celery, okra and corn.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Herbs, Etc.—Celery tops, parsley, mint, sage and herbs of all kinds need not be blanched, but washed well and dried in the sun or in drier. These are good for flavoring soups, purees, gravies, omelets, etc.

QUESTIONS.

1. What care should be used in selecting vegetables for drying?
2. Does this differ from that in canning?
3. In what condition must the vegetables be in order to get a good dried product?
4. What is the first thing done to the vegetables in preparing for drying? Why is this done?
5. After the vegetables are thus prepared, how should they be placed for drying?
6. What does the temperature have to do with drying?
7. Is it necessary to give any attention to the vegetables while the process of drying is going on?
8. How may you determine the temperature of the drier?
9. Describe the methods of drying such vegetables as beans, peas, corn, carrots and parsnips, onions, beets, pumpkins, okra, cabbage, peppers, etc.
10. Have you dried successfully any of the above vegetables?
11. One hundred pounds of fresh vegetables should weigh about how much when dried?
12. What becomes of the lost weight?

Lesson No. 20.—Canning Club.

STORING DRIED VEGETABLES.

(From State's Relation Bulletin No. A-88.)

When vegetables are first taken from the drier, if completely dried, they are very brittle. They are more easily handled and are in better condition for storing if allowed to stand 1 to 3 hours to absorb enough moisture to make them pliable before putting into bags or storing otherwise. If it is not convenient to store products immediately and they are allowed to stand several days, they should be heated to 160 degrees F. to destroy any insect eggs that might be on them. Care should be taken not to heat the vegetables higher than 160 degrees F.

Dried vegetables should always be stored in moisture proof containers and in a dry place free from dust and dirt. The best container is a tin box, bucket or can fitted with a perfectly tight cover. Perhaps the most convenient and cheapest container is the small paper bag. A small amount should be put in each bag, just enough to use for one or two meals. This will prevent the opening of any dried product that cannot be consumed in a short time. The upper part of the bag is twisted to

form a neck. The neck is bent over and tied tight with a string. The entire bag is then painted with a coat of melted paraffin, using a small brush or a frazzled end of a piece of rope. This makes the bag practically moisture and insect proof. To further protect from the insect ravages, label and pack bags in a tin container with a tight fitting cover. A large number of bags could be stored in an ordinary lard can. A glass jar with a tight seal is a good container for dried products. Paraffin coated paper containers of various sizes can be found on the market. If such containers are used they should also be stored as the paper bags. A list of companies from whom such containers can be purchased will be furnished upon request. All dried products should be examined occasionally. Upon the first appearance of insects, spread in thin layers in the sun until insects disappear; then heat at a temperature of 160 degrees and re-store carefully.

DRIED FRUITS.

In very dry climates fruits are usually dried in the sun. Most fruits dried in the sun discolor unless especially treated. For drying fruits in small quantities for home use only the small drier is satisfactory. On very hot dry days, fruits may be dried in the sun until surface begins to wrinkle and then finished in the drier. Only fresh ripe fruits should be used. The ideal moisture content of dried fruits is about 23 per cent. The ability to judge accurately as to when the fruit has reached the proper condition for removal from drier can be gained only by experience. When sufficiently dried, it should be so dry that it is impossible to press water out of the freshly cut ends of the pieces and will not show any of the natural grain of the fruit on being broken, yet not so dry that it will snap or crackle. It should be leathery and pliable. Before spreading fruit on the trays of the drier, line the tray with wrapping paper or cheese cloth. There is a possibility of the acid of the fruit acting upon the zinc. After drying cool quickly as fruit when cooled slowly shrivels and looks unattractive.

Berries.—Wash berries, free from leaves and stems, and remove surface moisture. Handle carefully and do not bruise. Spread in a thin layer on tray and dry slowly. Raise temperature gradually from 110 to 125 degrees in about 2 hours. Do not raise temperature higher than 130 degrees until a considerable portion of moisture has evaporated, as otherwise there would be expansion and loss of juice by dripping. This is accompanied by loss of flavor and color. Finish drying berries at 140 degrees from 2 to 3 hours. The whole process of drying berries takes from 4 to 5 hours.

Cherries.—Wash, remove surface moisture and spread cherries unseeded in thin layers on trays. If cherries are seeded

there will be a loss of juice. Dry from 3 to 4 hours, at 110 to 150 degrees. Raise temperature gradually.

Plums.—Select medium ripe plums, cover with boiling water, cover the vessel and let stand 20 minutes. Small thin fleshed varieties are not suitable for drying. Drain, remove surface moisture and dry from 4 to 6 hours, gradually raising temperature from 110 to 150 degrees F.

Apples and Pears.—Pare, core and cut apples in $\frac{1}{8}$ or core and slice in rings using fruit or vegetable slicer. As apples discolor quickly do not let stand long before drying. To prevent discoloration as the fruit is prepared it may be dipped for one minute in a cold salt bath, using 1 ounce of salt to 1 gallon of water. Remove surface moisture and dry at 110 to 150 degrees, raising temperature gradually. Dry from 4 to 6 hours and longer if necessary. Pears are dried in the same way as apples. They may be steamed 10 minutes before drying.

Peaches.—Peaches are usually dried unpeeled. They may be peeled if desired. Cut in halves, pit, lay in trays pit side up and dry at same temperature and for same length of time as apples.

Store dried fruits in the same way as dried vegetables.

QUESTIONS.

1. Should vegetables be stored away immediately after drying?
2. About how long should they be allowed to stand before packing away?
3. Why is this done?
4. If they cannot be stored away before two or three days, what should be done to them, and why?
5. In what kind of container should the dried vegetables be placed?
6. In what sized containers or packages should they be placed? Why?
7. What is a very cheap and safe way of storing dried vegetables?
8. If you should find insects in your dried vegetables after having stored them, how would you proceed to destroy them?
9. What common ways are used for drying fruits?
10. Is drying in the sun a good practice?
11. How does it affect the fruit?
12. Would it be all right to begin the drying in the sun and then finish with a drier?
13. What precaution should be used in storing dried fruits?

Lesson 21.—Canning Club.

HOW TO BUILD AND USE A FIRELESS COOKER.

(State's Relation Bulletin No. 776.)

Principle.—The principle of the fireless cooker is to retain the heat obtained by first boiling the food for a few minutes. It is then placed in the cooker which does not allow the heat to escape. The food must be heated in the same vessel in the cooker. This vessel must have tight cover and be moved from fire to cooker as quickly as possible. Otherwise, heat will be lost. Hot soapstones are sometimes placed in the cooker with the food when higher temperature is needed or longer cooking desired. These may be purchased from a hardware dealer at 50 cents each.

Advantages.—1. Time saving; while food is cooking, the housekeeper may be occupied with other duties without fear of its burning.

2. Better foods; many foods thus cooked for a longer time at a low temperature have finer flavor and are more wholesome than if cooked on a stove at higher temperature.

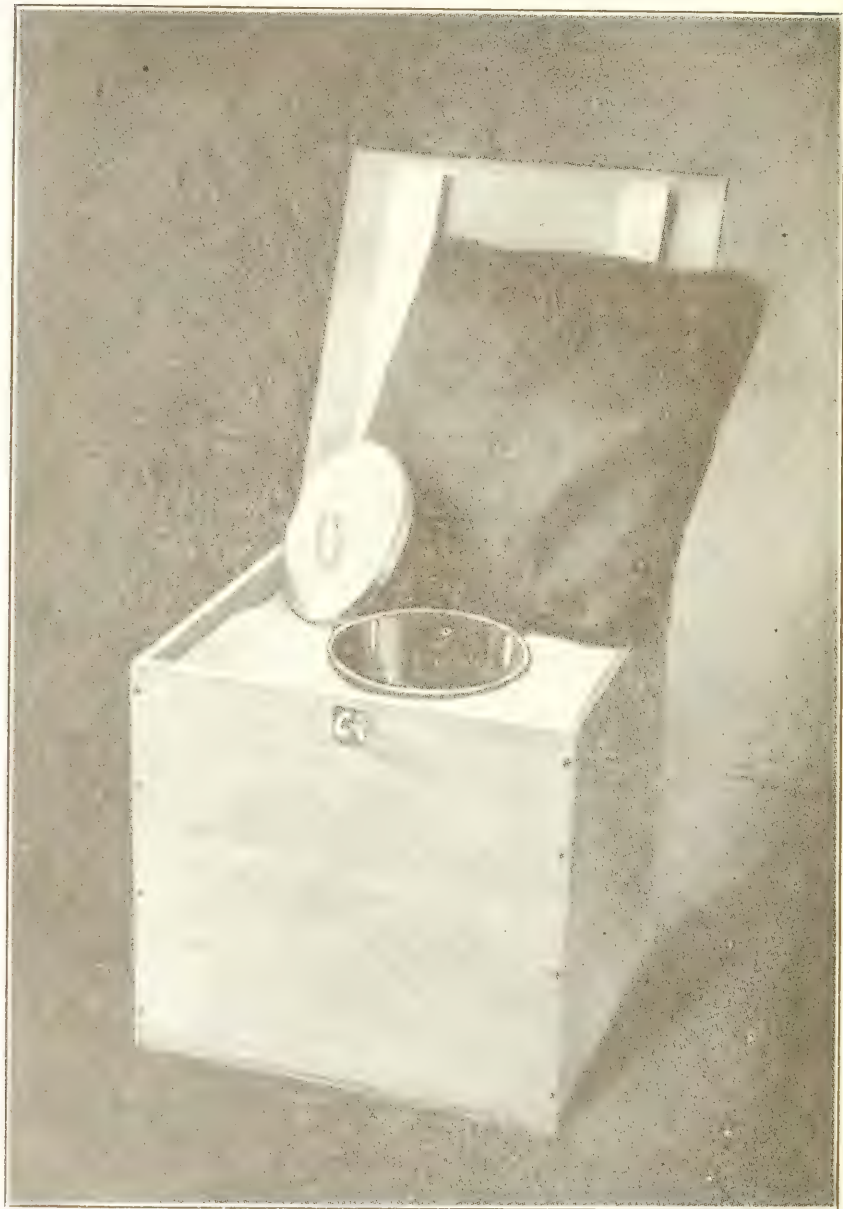
3. Comfort; saves working in hot kitchen, keeping up fires, watching food.

4. Fuel saving; fire kept up just long enough to make food boiling hot before putting in cooker. In summer, the use of a fireless cooker with a kerosene stove will result in both comfort and economy.

Building the Cooker.—Select a tightly built wooden box, an old trunk, barrel, large lard tub, or tin lard can for the outside container. This must be large enough to allow at least four inches of packing all around the nest. A box long enough to contain two compartments may be secured. If this is done there should be at least 6 inches of packing between the two nests, and two cushions to cover each nest separately so that one vessel may be removed without disturbing the other.

The Nest.—The nest, to contain the vessel of hot food, must be considered next. If no hot stone is to be used, this nest may be made of strong paste board cylindrical in shape and as snug as possible to allow cooking vessel to be moved in and out. If too large, the air space will cool the food. The cardboard forming this cylindrical nest should be lapped and fastened tightly. If a hot stone is to be used, a metal nest must be used. A tin bucket will do, or better still, have a tinner make a galvanized iron one deep enough to contain a soapstone and the cooker vessel. This metal vessel must be wrapped with asbestos to prevent the hot stone from scorching or burning the packing.

Packing.—For packing between the nest and outer container some material which heat will not pass through quickly must



What Every Home Should Have—A Home-made Fireless Cooker.

be used. First, line the box or other container with layers of paper to keep out cold air. Lint cotton, wool, shredded newspaper, Spanish moss and excelsior are good for packing. The packing should first be placed in the outside container to a depth of four inches, then place the cardboard or asbestos for the bottom of the nest. Next place the cardboard cylinder or the asbestos can and hold steady while pressing the packing tightly around it, leaving no air spaces. When this has reached the top of the nest, cut a piece of cardboard to fit the space, cutting out a circle to open the nest. This cardboard cover should be fastened securely to the nest by pasted strips of cloth or heavy paper. It is well to make a paper cover to keep the cardboard clean and hide the pasted strips on top. The space between the top of nest and the lid of the outside container must be filled with a cushion or pad. Make this the exact size of the space and stuff with the packing material. It should be at least four inches thick and should fit against the top tightly enough to cause pressure when the lid is closed. If a box is used, the lid should be on hinges with hook to fasten it down. The lid of a barrel or lard tub may be fastened by means of screw hooks and eyes at intervals around the top. If a wooden container is used, it will be more sightly if stained or painted a dull, dark brown or green. The cooker will be complete when castors have been put on bottom to make it easily moved.

Food Vessel.—For this any utensil which has a tight cover and which will fit the nest may be used. There should be no air space left to cause loss of heat. A vessel having straight sides and having the same depth as diameter is best. A special enamel or aluminum fireless cooker vessel can be purchased for 50 cents to \$1.50, depending upon size and material. Aluminum is the best because it will retain heat for a longer time.

Lesson No. 20-A.—Canning Club.

USING THE HOME-MADE COOKER.

Efficient cooking will depend upon retention of heat. A small quantity of food will not hold as much heat as a larger one and will therefore continue cooking for a shorter time. The more nearly full the vessel is of food, the better will the heat be retained. In heating the soapstone, be careful not to let them become red hot because of cracking.

Note.—All measurements used in these recipes are level. The cup used holds one-half pint. The abbreviations are: Tsp.—Teaspoonful; tbs.—tablespoonful; c.—cup.

CREOLE CHICKEN.

1 medium sized chicken.

6 tomatoes or 1 No. 2 can tomatoes.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

3 sweet red peppers, cut in small cubes.

3 sweet green peppers, cut in small cubes, or 1 No. 2 can of peppers.

$\frac{1}{4}$ pound ham or 2 or 3 slices bacon chopped finely.

1 bay leaf.

1 tablespoon chopped parsley.

2 teaspoons salt.

1 onion, size of egg.

2 tablespoons butter or bacon drippings.

Cut chicken as for stew: Sear by dropping it into 1 pint boiling water; then let simmer gently for one-half hour.

Cook the chopped onion in the butter or meat drippings until light yellow. Simmer tomatoes for 15 minutes with the bay leaf, strain, and pour over the onions. Now add the minced ham and parsley and cook for 15 minutes longer. To this mixture add the chopped peppers and the chicken stock and bring to a boil. Place the chicken in the fireless cooker vessel, pour over it this mixture of vegetables and let boil 5 minutes. Put at once into the fireless cooker. With the hot soapstone, let the chicken stay in the cooker for 2 hours; without hot stone, for 3 hours.

A ham bone may be substituted for the ham or bacon. If this is done, boil it for one-half hour in enough water to cover. Then add one cup of the ham broth to the tomato before cooking it with the bay leaf. This recipe gives a good way to use chicken too old to fry or broil. A similar dish can be made by using a quart of Canning Club soup mixture. When necessary, thicken the broth with a little browned flour before putting the chicken in the cooker.

CEREALS.

Hominy Grits.—Five cups water, 2 teaspoons salt, 1 cup hominy grits. Pick over and wash hominy grits. Have the salted water boiling and add the hominy slowly so as not to stop the boiling. Continue to boil rapidly for ten minutes over the fire, then place the vessel into the cooker as quickly as possible and allow to remain (over night) for about 12 hours. The vessel of hominy may be placed in another vessel of boiling water before being placed in the cooker.

Samp (Coarse Hominy).—One-half cup samp soaked in 1 cup cold water 6 hours. Add $\frac{1}{2}$ teaspoon salt and 3 cups boiling water. Boil rapidly 45 minutes. Put in cooker 8 to 12 hours.

Oat Meal.—Three cups water, 1 teaspoon salt, 1 cup oat meal. Carefully look over the oat meal and remove any husks or foreign substance. Add gradually to the boiling salted water and boil rapidly for 10 minutes stirring constantly. Now it may be put into the cooker. After 2 or 3 hours it is soft, but a better flavor will be developed by longer cooking. It may remain in

the cooker over night in the same manner the hominy grits are cooked (about 12 hours.) Next morning it may have to be reheated; to do this, set the cooker pan in a pan of water over the fire. When the water boils up well, the oat meal may be served.

Plain Rice.—One cup rice, 3 cups water, $1\frac{1}{2}$ teaspoon salt. Look over and wash the rice through several waters, until cloudiness is removed. Bring the salted water to a boil. One-half teaspoon lard may be added. Then add rice gradually into the boiling water in the cooker vessel so as not to stop the boiling. The grains should be kept moving in the boiling water and allow to boil 5 minutes before putting it into the cooker for 45 minutes or an hour.

There is considerable difference in rice. Old rice absorbs more water than new rice and the time for cooking it will vary. An hour will be sufficient usually for this small amount. Rice is injured by overcooking. When rice is tender, drain in colander and place in warm oven for about 5 minutes. Serve at once. Sometimes it is well after draining rice in colander to pour cold water over it. This will wash away the starchy substance between the grains, and keep them from adhering or sticking together. Then place the colander in a hot oven to heat and dry out the rice. If desired the lard may be omitted. It lends a brilliancy to the rice grains when cooked.

Rice in Pilaf.—(An Oriental Mixture.) Two cups stock, 1 cup rice, 2 tablespoons butter, 1 teaspoon sugar, 2 slices onion, 6 ripe tomatoes or 1 cup canned tomato juice, 1 teaspoon salt, $\frac{1}{8}$ teaspoon pepper, 1 tablespoon chopped green sweet pepper may be added.

Look over and wash the rice. Chop the onion very finely and fry in 1 tablespoon of the butter until yellow. Add to it the boiling juice of the tomatoes, and the boiling broth and allow all to boil before adding the rice gradually so as not to stop the boiling. Boil mixture about 5 minutes and place in cooker 1 hour. When ready to serve, add 1 tablespoon butter. Stir with a fork to mix evenly. Pilaf is injured by overcooking.

Lesson No. 20-B.—Canning Club.

SOUPS.

Vegetable Soup.—(Made without stock.) One-half cup carrots, $\frac{1}{2}$ cup turnips, 1 cup potatoes, $\frac{1}{2}$ cup onions, $1\frac{1}{2}$ cups cabbage, 3 cups tomato juice or 1 No. 3 can tomatoes, 1 tablespoon flour, 2 teaspoons salt, 1 tablespoon celery seed (crushed), 1 quart water, 4 tablespoons butter, $\frac{1}{2}$ tablespoon parsley, $\frac{1}{4}$ teaspoon pepper.

Cut all vegetables (except potatoes and onions and parsley) into small pieces. Cook them for 10 minutes in 3 tablespoons

butter. Add potatoes and cook 3 minutes longer. Mix all ingredients (except parsley) in the cooker utensils and boil 5 minutes. Mix 1 tablespoon butter and 1 teaspoon flour; add enough of the liquor to make it smooth and pour it into the mixture. Cook 5 minutes more and place into the cooker for 4 to 6 hours.

Creole Soup.—(Made with stock.) Stock two pounds shin beef (meat and bone), $1\frac{1}{2}$ quarts water. Cut the meat from the bone into small pieces. Crack the bone and soak 1 hour in cold water. Bring to boil slowly and when boiling place in cooker for 5 to 7 hours. When cooked, strain and set away to cool. The cake of fat which forms on top when stock is cold seals the stock and keeps out air and germs and should not be removed until soup is to be made. Then fat is removed and stock heated and any seasonings or additions desired are put in.

To 1 quart of this stock or 1 quart water in which chicken has been cooked, add quart of canned soup mixture and 2 tablespoons rice or barley, bring to a boil and cook in cooker 2 to 3 hours. This will make a delightful soup.

Meat and Vegetable Combinations.—With the less tender cuts of beef and mutton which require long, slow cooking, delicious dishes may be prepared by adding vegetables and cooking in the fireless.

Cut the meat in cubes, dredge with flour and brown it in meat drippings or lard and butter. Then brown the onions in the same fat. For every 3 or 4 cups of meat, use one of the following vegetable combinations or 1 quart of Canning Club soup mixture. Put into the fireless cooker vessel and add 1 cup boiling water with the first combination or two cups water with the second one. Boil for 5 minutes and put in cooker for 3 or 4 hours.

First:

2 cups okra.
2 cups tomatoes.
2 onions.
 $1\frac{1}{2}$ teaspoons salt.
 $\frac{1}{8}$ teaspoon pepper.

Second:

2 cups potatoes.
1 cup turnips.
1 cup carrots.
2 onions.
 $\frac{1}{2}$ cup celery or 1 tablespoon
celery seed crushed.

Lesson No. 22.—Canning Club.

FALL AND WINTER GARDENS.

Geo. C. Pye, County Agent, Greenwood, Arkansas, offers the following suggestions for fall and winter gardens:

All weeds and trash should be gathered and burned so as to destroy the thousands of insects which are so numerous at this time of the year.

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Well rotted barn manure should be spread liberally over the ground and turned under carefully.

The land should be plowed several times, followed each time by a good harrowing, thus making a well prepared seed bed. This must be done in order to secure moisture enough to germinate the seed.

IMPORTANT: A well prepared seed bed or no garden.

VEGETABLES	VARIETY	TIME TO PLANT.
*BEANS	Early Valentine Stringless Green Pod	July 15 to August 15.
BEEFS	Early Blood Turnip Early Eclipse	August 1 to September 1.
CABBAGE	Early Drum Head Jersey Wakefield Savoy	August 1 to September 1. (Plant in drills; thin out when 3 in. high. Leave plants 8 to 12 in. apart. Do not transplant.)
*CARROTS	Early Varieties	August 1 to September 1.
COLLARDS	Georgia	August 1 to August 15. (Plant in drills.)
GREENS	Mustard Rape Seven Top Turnips	September 15 to December 1. (Plant every two weeks until there are thrifty plants.)
KALE	Dwarf German	July 15 to September 15.
*LETTUCE	Big Boston	September 1 to October 31. (Plant every two weeks until good stand is secured. Some protection necessary in winter.)
*ONIONS	Silver Skin varieties	August 1 to November 1. (Plant only large sets.)
PEAS	First and Best	August 15 to October 1. (This crop will succeed when winter is late setting in.)
RADDISH	Early Turnip Rooted White Icicle Chinese Rose	September 1 to October 15. (Plant a few seed every two weeks.)
RUTABAGAS	Purple Top	July 15 to August 15. (They will sometimes succeed.)
*SPINACH	Bloomdale	August 1 to November 1. (Plant every two weeks until there is a stand.)
TURNIPS	Purple Top Globe Early Amber Globe White Egg	August 15 to September 30. (For best results plant in drills and cultivate.)

Note.—Vegetables marked with (*) are especially recommended for Canning Club members for their fall and winter garden work.

QUESTIONS.

1. What attention should be given to the seed bed before planting fall and winter gardens?
2. What is the advantage of having a fall and winter garden?
3. Do you have a fall and winter garden at your home?
4. Is it possible to grow vegetables in the fall and winter?
5. What vegetables are especially recommended for fall and winter use?

6. What special vegetables are recommended for Canning Club girls?

7. About what part of the 1/10 acre should be planted for fall and winter gardens?

8. Should there be more than one planting of any of the vegetables recommended?

9. Can you find use for your hot bed and cold frame at this time of the year?

Lesson No. 23. Canning Club.

FOOD THAT CAN BE USED SOMETIMES INSTEAD OF MEAT.

(Peanuts, Soy Beans, Cowpeas and Milk.)

Do you grow peanuts in your field? You ought to eat more peanuts. They are too good for the pigs to get them all. Do they make you sick? Then do not eat so many at one time; don't eat them between meals nor at night after supper and don't eat them so fast.

Peanuts help to build muscle and keep you strong and make you grow, very much as does meat. They have lots of fat in them, too. Why not serve them for dinner or supper and in your school lunch? You can learn to make them into many delightful dishes.

PEANUT BUTTER.

Run evenly roasted peanuts through a food chopper, using the blade that crushes the food. Measure these crushed nuts and add $\frac{3}{4}$ of a level teaspoonful of salt to each cupful of peanuts. Stir the salt well into the nuts then put them through the chopper two or three times. The peanut butter is then ready to use for making sandwiches, cookies, salads and other good things. It can be thinned with water and a little lemon juice or vinegar and used as a salad dressing for lettuce, bananas or pears.

PEANUT COOKIES No. 1.

2 tablespoons butter.	$\frac{1}{2}$ teaspoon lemon juice.
1 teaspoon baking powder.	$\frac{3}{4}$ to $1\frac{1}{2}$ cups flour.
1 egg beaten.	$1\frac{1}{2}$ cups chopped nuts. A few
$\frac{1}{4}$ cup sugar.	whole nuts.
2 tablespoons milk.	

Cream butter and sugar, add eggs and milk gradually, then flour mixture, nuts and lemon juice. Drop from spoon to greased tins, put nut in center of each and bake.

PEANUT COOKIES No. 2.

2 cups flour.	1 teaspoon salt.
1 $\frac{1}{3}$ cups crushed nuts.	2 tablespoons butter.
$\frac{5}{8}$ cup sugar.	2 teaspoons baking powder.
1 egg.	$\frac{2}{3}$ cup milk.

Cream butter and sugar, add egg, slightly beaten, then the milk. Sift dry ingredients together and add to the sugar and butter mixture. Add the crushed nuts, roll very thin on floured board, cut and bake in hot oven.

PEANUT BREAD.

(Enough for three loaves.)

2¼ pounds or 2 quarts sifted flour (more if flour is soft.)
¾ pound roasted and hulled peanuts.
2 cakes yeast or 2 little cups liquid yeast.
3 tablespoons sugar.
1½ tablespoons salt.
¾ cups lukewarm liquid, (water, milk, or equal parts water and milk.)

Break the peanuts lightly into small pieces and mix thoroughly with the flour. Proceed from this point exactly as directed under the straight-dough method if compressed or liquid yeast is used, using only ¾ cups liquid instead of 1 quart. Place the loaves in the oven to bake when the dough in the indicator shows 2½ times the original volume. If dry yeast is used, soak 1 yeast cake in water as usual for 1 hour. Use this in making a sponge with 1½ quarts sifted flour and the required amount of salt. In the morning, or when the sponge is light, stir it until it is smooth, add the sugar, and, finally, the well-blended mixture of ¾ quart of flour and ¾ pound of crushed, roasted peanut meats. Knead until smooth and elastic, adding flour or water, if required to make the dough of the proper consistency. Cover and allow to rise again until quite light, divide and mould into loaves, allow to rise until the indicator shows 2½ times the original volume, and bake as directed above.

CREAM OF PEANUT SOUP.

2 tablespoons butter. 4 cups milk.
2 tablespoons flour. ¼ to ½ cup cracked parched
Salt, pepper. peanuts.

Make a thin, white sauce of the butter, flour and milk, add the peanuts and seasoning and boil one minute. Serve hot.

Lesson No. 24. Canning Club.

SOY BEANS.

Soy beans are a very good food for people. They, too, help to cut down the meat bill. Try these recipes.

SOY BEAN CROQUETTES.

2 cups beans. salt, black pepper, cayenne.
1 egg. 3 tablespoons melted butter.
¼ cup crumbs.

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Cook beans in fireless cooker over night. Rub through fine strainer. Mix half of beaten eggs with beans. Add salt, pepper and butter, bread crumbs, and mix well. Shape in croquettes, roll first in egg and then in crumbs, being sure that the croquette is well coated on both sides with both egg and crumbs. Fry in deep fat and garnish with lemons and serve with tomato sauce. This mixture can be shaped and baked as a meat substitute loaf.

SOY BEAN SOUFFLE.

1 cup yellow beans.	1 teaspoon salt.
2 tablespoons butter.	$\frac{1}{8}$ teaspoon pepper.
4 tablespoons flour.	2 or 3 eggs.
1 cup milk.	

Soak beans 12 hours, cook 4 hours, drain and run through sieve. Melt butter, add flour then milk and boil one minute, stirring constantly. Add 2 cups bean pulp, cool and add beaten egg yolk and seasoning. Fold in beaten whites. Bake in buttered dish in a moderate oven 30 minutes.

SOY BEAN BISCUIT.

Two cups flour, 2 teaspoons baking powder, 1 teaspoon salt, 2 tablespoons shortening., about $\frac{2}{3}$ cup liquid. You may substitute $\frac{1}{2}$ soy bean meal or $\frac{2}{3}$ peanut meal.

Mix thoroughly; sift two or three times to accomplish this. Cut shortening in with a knife; then rub between hands. This will give a flaky texture to bread. Always work shortening in dry. Add liquid; mix with knife or hand. Have dough as soft as may be handled, roll and cut and bake in oven 500 degrees F.

MUFFINS.

1½ cups soy bean meal.	2 cups water.
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Steam for 1 hour; cooking takes away strong flavor. You may substitute rice, potato, grits or any cereal left over. Corn meal mush may be used.

2 cups flour.	2 cups cooked material.
1¼ teaspoons salt.	2 teaspoons sugar.
3 teaspoons baking powder.	2 eggs (beaten lightly.)
2 tablespoons shortening.	About $\frac{1}{2}$ cup liquid.

Sift baking powder with flour well. Dissolve sugar and salt in the liquid, or put in dry. Combine and mix well. Bake.

SOY BEAN BREAD.

(Enough for four loaves.)

- 2¼ quarts sifted bread flour, (more if flour is soft.)
- $\frac{3}{4}$ quart (3 cups) soy bean meal.
- 1 quart lukewarm liquid, (milk, water or equal parts milk and water.
- 4 tablespoons sugar.

4 teaspoons salt.

2 cakes yeast or 2 cups liquid yeast.

If liquid yeast is used, a corresponding reduction must be made in the remaining liquid used for the dough. If dry yeast is used, follow directions given under "Peanut Bread" with dry yeast, making a sponge at night with part of the flour, salt, water and yeast. In the morning, add the sugar and the mixture of soy-bean meal and the remaining flour. Mix the soy bean meal thoroughly with the flour by sifting together twice. Rub the yeast smooth with a small portion of the lukewarm liquid. Dissolve the sugar and salt in the rest of the liquid and add to the yeast mixture. Mix this liquid with the flour and soy bean meal, adding more flour if necessary to make a dough stiff enough to knead, kneading until a smooth and elastic dough has been formed. Cover and set aside in a moderately warm place until the dough has doubled in volume. Then cut down from the sides of the bowl, knead, and if too soft or too stiff, add flour or water to make a dough of the proper consistency. Have the dough a trifle softer than for ordinary bread. Cover and set to rise again until double in bulk. Cut down from the sides of the bowl, divide into four equal portions and mold into loaf shape, place in greased and slightly warmed pans, and allow to rise until double in bulk according to indicator. Bake in moderately hot oven 45 to 50 minutes. Other dry meals, such as corn meal, finely ground oat meal, barley, ground rice, rye flour, kafir, milo, feterita, dried peas, beans, etc., may be used in place of the soy bean meal in this recipe. Allow dough containing the cereals to rise until the indicator shows $2\frac{1}{2}$ times the original volume.

Lesson No. 25.—Canning Club.

COWPEAS.

We used to cook peas with salt pork every time we served them. Cook them different ways then you won't get tired of them.

COWPEA SOUP.

2 tablespoons butter.	1 tablespoon chopped onion.
2 tablespoons flour.	2 tablespoons chopped celery or
$\frac{1}{2}$ bay leaf.	parsley.
Salt, pepper.	1 cup dried cowpeas.

Soak the peas over night in water enough to cover, then boil 3 or 4 hours in clear water. (Fireless cooker may be used to advantage here.) Dry onion in the fat until it is tender but not brown. Rub into this the flour, then add 2 cups of water from the cooked peas, the bay leaf, celery, parsley, salt and pepper. Mash the cooked peas through a strainer and add them

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to the soup mixture. Add hot water, or the remaining water from the peas if there is any, enough to make 6 cups of soup. Serve very hot.

COWPEA LOAF.

- 2 cups cooked cowpeas.
- 1 cup cooked rice or stale bread crumbs.
- $\frac{1}{4}$ cup grated cheese (if you have it).
- 2 slices fat pork.
- 2 tablespoons chopped onion.
- 2 tablespoons chopped sweet pepper.
- 2 medium tomatoes peeled and chopped.
- 1 bay leaf crushed.
- 2 teaspoons ketchup.
- Pinch black pepper, salt.
- 2 tablespoons flour.

Mash peas and rice, or run through vegetable press. Fry the pork until it is crisp and brown, remove from pan and break in bits. Add onion to the fat and cook until brown, add flour, tomatoes, peppers, bay leaf, bits of meat and ketchup. Cook until smooth and thickened. Add to the rice and pea mixture. Season and make into a loaf, adding bread crumbs or hot water, which ever is needed. Garnish with strips of bacon $\frac{1}{4}$ -inch wide and bake as you would a loaf made of cooked meat.

Note.—This mixture may be made into croquettes and fried in deep fat, or as a filling for stuffed peppers or tomatoes.

Lesson No. 26.—Canning Club.

MILK.

By HELEN S. BROWN,

District Home Demonstration Agent.

Milk, the only food of the young of the human and other animals, is the most essential of foods for children. If every child should have a quart of milk per day why not use more for the whole family? For those members of the family who do not like raw milk, let us conceal it by using in some of the following ways:

MILK SOUP.

The ingredients of milk soups may be grouped under four heads: (1) a liquid; (2) a starchy substance used for thickening; (3) a fatty substance, and (4) flavoring. The liquid may be milk, either whole or skim, or a mixture of two or more of the following in any proportion. Meat stock, water, cream, vegetable juice, including pulp. The starchy substance may be flour, corn-starch, or potato starch. The proportions are usually three-fourths of a level tablespoon of flour and an equal amount of butter to each cup of liquid. If starch is substituted for flour,

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one half tablespoon to a cup will usually be found sufficient. An interesting school exercise may be arranged by having students make potato starch and use it for thickening these soups or in other ways. The following recipes for soup and chowder will serve six children generously:

CREAM OF PEA SOUP.

- 1 can peas or 1 quart fresh peas.
- 1 pint milk.
- 2 tablespoons butter.
- 2 tablespoons flour.
- 1 teaspoon salt.
- $\frac{1}{4}$ teaspoon pepper.

Heat the peas in their own liquor or cook them in boiling, salted water until tender. Drain off the liquid and rub the peas through a strainer. Scald the milk and add to it the butter and flour rubbed to a smooth paste. Cook 1 minute, add the peas, salt and pepper. Boil for a few minutes and serve at once.

CREAM OF TOMATO SOUP.

- 1 pint or 1 can tomatoes.
- 2 tablespoons butter.
- 1 tablespoon flour.
- 1 teaspoon sugar.
- 1 teaspoon salt.
- 1 quart milk.
- Sprig parsley.
- $\frac{1}{4}$ teaspoon white pepper.
- $\frac{1}{2}$ teaspoon soda.

Cook the tomatoes slowly with the flavoring for 10 minutes and rub through a strainer. Scald the milk, thicken with the flour and butter rubbed to a paste; reheat the tomatoes and add the soda; combine with the milk and serve at once.

POTATO CHOWDER.

- 6 medium sized potatoes, sliced.
- $\frac{1}{4}$ lb. salt pork.
- 1 tablespoon chopped onion.
- 1 tablespoon butter.
- 1 tablespoon flour.
- 1 pint milk.
- 1 pint water.
- 1 teaspoon salt.

Fry the onions and pork together until both are a delicate brown. Put a layer of the sliced potatoes into a kettle, then a layer of onions and pork, and sprinkle with salt. Repeat this until those materials are all used. Pour over them the grease from the pan in which the pork and onions were fried and add the water. Cover and simmer 20 minutes or until potatoes are tender. Thicken the milk with the flour mixed with the butter and pour it over the potatoes.

Lesson No. 27.—Canning Club.

SAUCES.

By HELEN S. BROWN,
District Home Demonstration Agent.

There is a great variety of sauces which can be used in the home to serve with meat or vegetables and can also be used in making sandwich fillings. In a general way they are like milk

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soups, except that more flour is used. Two tablespoonfuls of flour and 2 tablespoons of butter or other fat are usually allowed for each cup of liquid. This liquid may be water, broth, tomato juice, milk, cream, the water in which vegetables are cooked, or a combination of two or more of these.

TOMATO SAUCE.

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|-----------------------|------------------|
| 1½ cups tomato juice. | 1 slice onion. |
| 2 tablespoons flour. | Sprig parsley. |
| 2 tablespoons butter. | ½ teaspoon salt. |
| ⅓ teaspoon pepper. | |

Add the seasoning to the tomato juice and simmer until the liquid has been reduced to about 1 cup. Melt the butter in a saucepan, stir in the flour, and when this is smooth add the strained tomato juice. Cook for a few minutes or until smooth and thick. The tomato juice may be used plain, omitting the first cooking with the seasoning. This will provide a tablespoon for each of 16 people.

WHITE SAUCE.

- | | |
|-----------------------|--------------------|
| 2 tablespoons butter. | ½ teaspoon salt. |
| 2 tablespoons flour. | ¼ teaspoon pepper. |
| 1 cup milk. | |

Melt the butter, stir in the flour, and cook until smooth, but not brown; add the milk and cook until smooth and creamy. Season. Serve with cabbage, onions or even hot toast, shredded meat, fish, etc. This makes 12 portions of 1 tablespoon each.

MILK TOAST.

Toast bread or cold biscuits a good brown. Arrange in bowl; pour hot white sauce over the toast. If desired, add 1 teaspoon sugar and a little nutmeg to the white sauce.

HOT COCOA.

- | | |
|--------------------------|------------------|
| ¼ cup cocoa. | 1 cup water. |
| 3 cups milk. | ¼ cup sugar. |
| 1 tablespoon cornstarch. | ⅓ teaspoon salt. |

Mix cocoa, cornstarch and water; boil 10 minutes. Add milk and sugar to the mixture and cook about 10 minutes more. Add salt. Beat well and serve. Whipped cream adds food value and makes delicious.

Lesson, No. 28.—Canning Club.

HOW TO USE DRIED FRUITS.

By HELEN S. BROWN,

District Home Demonstration Agent.

Do you know how good dried fruits can be? Let us learn to use them in other ways besides sauce. How many ways do

you plan to use that peck or more of dried apples? Remember these general rules for cooking all dried fruits, whether prunes, peaches or apples.

1. Wash dried fruit in cold water.
2. Let soak in cold water over night or until it has regained natural size.
3. Cook in an enamelware or an earthenware dish. Tin or iron gives unpleasant flavor and an undesirable color.
4. After soaking the fruit, cook it slowly on the back of the stove.
5. Cook in the water in which the fruit has been soaked.
6. Do not sweeten until half done.

APPLES.

Why not serve apple sauce for breakfast with a bowl of well-cooked mush? Then serve peach sauce with well-cooked oat meal for another breakfast. For a light dessert use one of these, either apple or peach whip, scalloped apples or bread and apple pudding.

Soak 6 to 8 hours, or overnight, using 6 pints of water to 1 pound of apples or 3 parts of water to 1 part of apples. Two hours' soaking is sufficient for thinly sliced apples. Commercial apples are sulphured and do not discolor.

APPLE SAUCE.

Cook about 30 minutes in the same water; then add 1 cup of sugar to 1 pound of fruit, $\frac{1}{2}$ teaspoonful of nutmeg or cinnamon and mash.

APPLE PIE.

Cook in the same water about 5 minutes to make them tender, then drain off water and use in pie in the same way as fresh apples. One pound of dried apples will make 8 large pies.

APPLE BUTTER.

Wash apples, let soak in cold water until they have regained natural size. Cook slowly until tender. Run through sieve or strainer. Add sugar to taste.

APPLE WHIP.

Take 2 cups of apple sauce or apples, cooked and run through a sieve. Beat the whites of 2 eggs until stiff. Gradually beat in the apple; sweeten to taste, beating in sugar gradually. Flavor with a little nutmeg or cinnamon. Pile on a cold dish, serve plain with whipped cream or a boiled custard made of the yellows of the eggs.

BREAD AND BUTTER APPLE PUDDING.

Cover bottom of a shallow baking dish with apple sauce, cut stale bread in $\frac{1}{3}$ -inch slices, spread with softened butter, remove crusts and cut in triangular shaped pieces, then arrange

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closely over the apple. Sprinkle generously with sugar, add few drops of vanilla. Bake in moderate oven; serve with cream.

PEACH BUTTER.

Wash dried peaches; let soak in cold water until they have regained their natural size. Cook slowly until tender in the water they were soaked in. When soft run through a sieve. Season with sugar and spices if desired.

PEACH WHIP.

Take whites of two eggs, beat stiff; have cooked and run through sieve 2 cups of peaches. Add slowly to the beaten eggs. If a less fluffy whip is desired, use 3 cups of peaches to 2 egg whites. Add sugar to taste and nutmeg if liked. Serve plain, with whipped cream or a custard made of the egg yolks. This dessert is light, suitable for children or sick, as well as for the rest of the family.

Lesson No. 29.—Canning Club.

BREADS—WHEAT AND WHEAT SUBSTITUTES.

Every club girl wants to be a successful bread maker. Let's practice on both yeast and quick breads. Be sure to use some of the wheat substitutes. They are good for us and will mean more wheat for the hungry world. These recipes are by Mrs. Hannah Wessling of the Bureau of Chemistry.

BAKING POWDER BISCUITS.

2 cups flour.

4 teaspoons baking powder.

1½ teaspoons salt.

2 tablespoons butter or other fat.

About $\frac{3}{4}$ cup milk, water or a mixture of the two.

Mix and sift the dry ingredients. Work in the fat with a fork or with the fingers. Add the liquid gradually, making a dough that is of the right consistency to roll out easily. Turn out on a floured board and roll to one-half inch in thickness. Cut with a biscuit cutter, place in a buttered pan and bake in a hot oven about 15 minutes. An easier way is to add so much liquid that the biscuits can be dropped from a spoon on the baking tin. This saves the use of board and rolling pin. Baking powder biscuits and many other kinds of bread that are served hot contain more fat than ordinary wheat bread does and are usually eaten with more butter. These facts should be taken into consideration in planning meals, particularly those which are to be kept within a given fuel value.

50 PER CENT FLOUR SUBSTITUTE BISCUIT.

2 cups corn meal or soy bean meal, peanut meal, rice flour, or other substitute.

2 cups white flour.

4 teaspoons baking powder.

2 teaspoons salt.

4 tablespoons shortening.

Liquid sufficient to mix to proper consistency (1 to 1½ cups.)

Sift together the flour, meal, salt, and baking powder twice. Have the shortening as cold as possible and cut it into the mixture with a knife, finally rubbing it in with the hands. Mix quickly with the cold liquid (milk, skim-milk or water) forming a fairly soft dough which can be rolled on the board. Turn onto a floured board; roll into a sheet not over one-half inch thick, but into rounds; place these in lightly floured biscuit tins (or shallow pans) and bake 10 to 12 minutes in a rather hot oven.

SWEET POTATO MUFFINS.

1½ cups cooked sweet potato (Irish potatoes may be used instead with or without the sugar.)

1½ cups sifted white flour. 2 tablespoons sugar.

1 teaspoon salt. 2 eggs.

2 teaspoons baking powder. 2 tablespoons shortening.

Liquid sufficient to make a rather stiff batter (about ½ cup.)

Boil the potatoes in the skins until tender, drain, peel and mash fine. Putting the potatoes through a ricer or colander is better than mashing. Sift together the flour, salt, sugar and baking powder twice. Beat the eggs until light and add to the cool mashed potato. Next add the melted shortening, then the flour mixture, alternating with portions of the liquid, until a batter is formed somewhat stiffer than for ordinary flour muffins. Drop by spoonfuls into greased muffin pans until half filled and bake 20 to 25 minutes in a fairly hot oven.

SOY BEAN, RICE, OAT MEAL, CORN MEAL, OR WHITE POTATO MUFFINS.

In the above recipe, replace the cooked sweet potato with any cooked cereal, such as rice, oat meal, corn meal or with cooked soy bean meal, cooked or baked dasheen, etc. When using any substance containing cooked starch it is necessary to have the batter rather stiffer than for wheat flour muffins.

CORN BREAD.

One:

2 cups corn meal.

2 cups sweet milk (whole or skim.)

4 teaspoons baking powder.

1 tablespoon sugar.

2 tablespoons fat.

1 teaspoon salt.

1 egg (may be omitted.)

Two:

2 cups corn meal.

2 cups sour milk.

1 teaspoon soda.

2 tablespoons fat.

1 teaspoon salt.

1 egg (may be omitted.)

1 tablespoon sugar.

Mix dry ingredients. Add milk, well-beaten egg, and melted fat. Beat well. Bake in a shallow pan for about 30 minutes.

SPOON BREAD.

2 cups water.	1 tablespoon fat.
1 cup milk (whole or skim.)	2 eggs.
1 cup corn meal.	2 teaspoons salt.

Mix water and corn meal and bring to the boiling point and cook 5 minutes. Beat eggs well and add with other materials to the mush. Beat well and bake in a well greased pan for 25 minutes in a hot oven. Serve from the same dish with a spoon. Enough for six.

CORN MEAL COOKIES.

$\frac{1}{2}$ cup sifted flour.	1 cup sugar.
$1\frac{1}{2}$ cups fine corn meal.	3 tablespoons butter.
1 teaspoon salt.	1 egg.
2 teaspoons baking powder.	1 teaspoon vanilla extract.
Milk sufficient to mix (about one-half cup.)	

Follow directions given for soy bean wafers, adding, however, the well-beaten eggs to the creamed butter and sugar, then the flavoring extract, and finally the flour mixture and milk. Roll thin, cut and bake until a delicate brown.

Lesson No. 30.—Canning Club.

LIGHT OR YEAST BREAD.

LONG FERMENTATION METHOD—OVERNIGHT SPONGE.

(Enough for four loaves.)

- 3 pounds or 3 scant quarts sifted flour (more if flour is soft).
- 1 cake yeast, dry or compressed, or $\frac{1}{2}$ cup liquid yeast.
- 1 quart lukewarm liquid.
- 2 tablespoons sugar.
- $1\frac{1}{2}$ tablespoons salt.
- 3 tablespoons shortening if desired.

Where liquid yeast is used its volume must be included in the total liquid required. If dry yeast is used it should be soaked in some lukewarm water for an hour before mixing with the flour. This amount of water will form part of the total liquid required for mixing. In the evening measure or weigh out into the mixing bowl one-half the required amount of flour, and if the weather be cold, warm slightly. Mix the yeast, rubbed smooth, with two-thirds of the total amount of lukewarm liquid in which has been dissolved the salt. Add this yeast mixture to the flour, beat thoroughly, cover, and place where it will be from 65 to 75 degrees F. In weather moderately warm neither the flour nor the water need be heated. In hot weather, it is better not to set a sponge overnight, since there is great danger of it turning sour before morning, unless the dough can be kept cool enough.

In the morning sift the sugar with the rest of the flour and warm. Beat up the sponge thoroughly, add the remaining one-third of liquid, which may be warm enough to bring the temperature of the sponge up to 80 to 88 degrees. Next add the warm flour and sugar, then the softened shortening, if the latter is desired. Should the dough be too soft or too stiff, add flour or liquid, a little at a time, kneading it in thoroughly until a dough of the proper consistency is formed; knead until the dough is smooth and elastic and no longer sticks to the bowl or finger. Cover and set where it will be kept at about 80 to 88 degrees. Allow to rise 2 hours or until quite light.

Cut down from the sides of the bowl, grease the hands lightly and knead just enough to expel the largest bubbles of gas. Cut off a bit of dough to serve as an indicator; divide the rest into four equal portions, mold each quickly, stretching the outside of the loaf and pinching together underneath; place crease side down in lightly greased pans which have been warmed but are not hot. Set the loaves in the same warm place and allow to rise 50 minutes to 1 hour, or until the indicator shows two or three times the original volume, depending upon the kind of flour used. Place in the oven and bake 50 minutes. The oven should be about 425 degrees at first and may then decrease gradually until about 375.

SCORING BREAD.

It is very helpful, especially for a beginner in the art of bread making, to know what the characteristics of a good loaf of bread are.

Appearance.—First of all, bread should be attractive in appearance. This requires that it should be of good shape, evenly rounded on top, with a smooth unbroken crust, having neither breaks nor bulges. It should be of uniform golden brown color over the entire loaf.

Lightness.—It should be light i. e., be relatively large for its weight.

Crust.—When the loaf is cut the crust should be found of even thickness over the entire loaf and should be crisp and tender rather than hard and tough.

Color of crumb.—The crumb should be of a pale creamy tint with a satiny luster or sheen as one looks across the loaf.

Texture.—The grain of the loaf should be fine and even, having many small cells, more or less uniform in size, rather than fewer cells of larger size. A good bread flour, properly handled during the process of bread making, will usually yield cells oblong in shape rather than round, while the feel of it will be soft and almost velvety.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

CREAMED POTATOES.

Take 1 cup hot white sauce. (See milk lesson.) Add 2 cups diced cooked potatoes, reheat and serve.

MASHED TURNIPS.

Wash and pare turnips, cut in slices and cook in boiling salted water until tender, from 35 to 45 minutes. Drain, mash and season with butter, salt and pepper.

CREAMED TURNIPS.

Wash and pare turnips, cut in 1-inch cubes. Drop into boiling salted water, boil until tender. To 3 cups turnips take 1 cup medium white sauce. Drain turnips, reheat in white sauce, serve.

SWEET POTATO PUFF.

Select smooth, medium sized potatoes, wash well, pare very thinly. Cook until tender in boiling salted water. Drain, mash and add 1 tablespoon butter to 2 cups potato. Beat until light and fluffy. Put in buttered baking dish, brown lightly in the oven. Serve hot. This dish may be much improved by adding 1 cup nut meats, as pecans, black walnuts or peanuts.

GLAZED SWEET POTATOES.

Wash and pare six medium sized potatoes. Cook 10 minutes in boiling salted water. Drain. Cut in halves lengthwise and put in a buttered pan. Make a sirup by boiling 3 minutes $\frac{1}{2}$ cup sugar, 4 tablespoons water and 1 tablespoon butter. Brush potatoes with sirup and bake 40 minutes, basting twice with remaining sirup.

COOKING DRIED VEGETABLES.

It must be remembered that the water which has been dried out of vegetables must be restored to them before cooking and that this process requires time. In general, the longer it takes to dry the longer should the dried products soak. Because the kind of vegetable (old and tough or young and tender) the size of the pieces (large or small), and the amount of moisture which the dried product contains affect the length of time the vegetable should soak and the club girl must use her best judgment in selecting the method of preparation best suited to her own products. Once soaked, dried vegetables can be cooked in almost any of the ways in which fresh ones can be cooked.

BEANS.

Wash. Soak over night in three times as much water as beans. Cook in same water used for soaking about 2 hours. Season with butter. Do not salt until three-fourths done. A white sauce may be served with these.

PEA PUREE.

Wash peas. Soak over night then drain. Add fresh water and cook at simmer point until tender. Press through a strainer.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

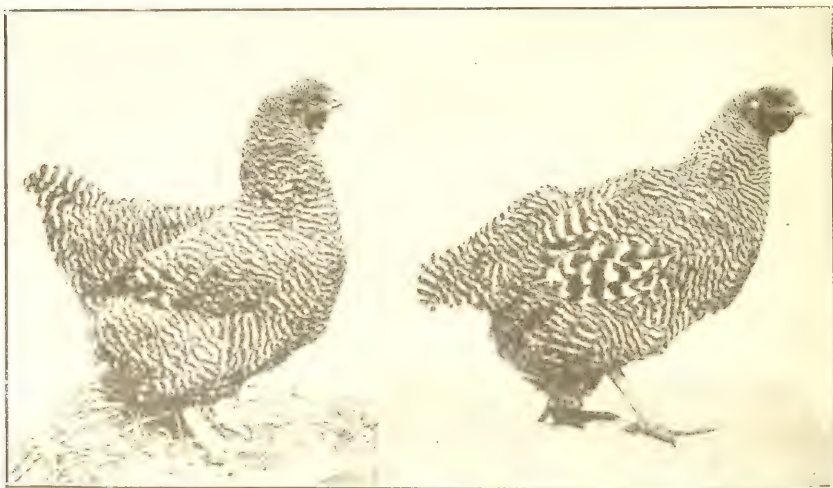
Season with butter, salt, pepper and onion juice if liked. Add three times as much milk as pea pulp. Serve hot.

TOMATOES—BROILED.

Wash and cut tomatoes in halves, crosswise. Place them, with cut surface up in a frying pan without fat. Cook on top of range or in oven at low temperature for about 30 minutes or until tomatoes are soft, but not broken. Add a bit of butter to each half of tomato and season with salt and pepper. Serve at once. This is very nice served on crisp, hot toast.

TOMATO SURPRISE.

Cut stem end from tomato. In hole made drop an egg. Place in oven and bake until egg is firm. Fleck with butter, salt and pepper. Place on toast and serve at once.



Showing Strong and Weak Constitution.

Lesson No. 1.—Poultry Club.

INSTRUCTIONS TO POULTRY CLUB MEMBERS.

1. Girls joining the Poultry Club must be between 10 and 18 years of age on January 1st of any given year.
2. Any boy or girl may become a member by signing the regular application card.
3. A first year member must set at least one setting of thirteen eggs from standard variety of chickens during the hatching season.
4. A second year member must set at least three settings of thirteen eggs from standard variety of chickens during the hatching season.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

5. Each girl must plan to do as much as possible of her own work and keep strict account of all expenses, such as feed, labor (for which 10c an hour should be charged) sale of chickens, sale of eggs, number of eggs set, number hatched, etc.

6. Each member must agree to study the Instructions.

7. Each member must agree to send to the local Canning Club Agent on November 30th, the record of her year's work made out on a blank furnished by the Agent.

8. Each member should write a history of her year's work.

9. Each first year member is expected to exhibit at the County Fair or County Contest in the fall, a pair of chickens of her own raising.

10. Each second year member is expected to exhibit at the County Fair or County Contest in the fall, a pair of chickens and one dozen eggs of her own raising.

11. All prizes on live poultry must be decided in accordance with the standards of the breeds of the American Standard of Perfection, published by the American Poultry Association, Sanders Publishing Co., Chicago.

12. State prizes will be offered for the following standard varieties only: Plymouth Rocks, Wyandottes, Rhode Island Reds, Leghorns, and Orpingtons.

13. Incubators are not to be used.

QUESTIONS.

1. What are the requirements for membership in the Poultry Club?

2. What are first year members required to do?

3. What are second year members required to do?

4. What must the record book of Poultry Club members show?

5. What constitutes an exhibit of first year members? Second year members?

Lesson No. 2.—Poultry Club.

VARIETY OF CHICKENS—NEST.

By G. C. WATKINS.

Your chickens or eggs are to be of the following standard varieties:

Plymouth Rock

Leghorns

Rhode Island Red

Orpingtons

Wyandottes

If you are starting this year with four hens and a rooster:
Gather eggs daily.

Keep in cool place away from drafts.

If the eggs are kept long turn half over twice a week.

Select normal size and shaped eggs for setting.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

If you are starting with thirteen eggs they must be from the above standard varieties of chickens. If they are kept long before setting follow the above rules.

Do not wait until you are ready to set your eggs before you prepare the nest. Select a dry place in the hen house or shed away from the strong light and up off the ground about two feet. Prepare a box about 16 inches long, 16 inches wide and 16 inches high with tight sides and top, a narrow strip above five inches wide across the front of the box to keep the nesting material from falling out. Nail a strip about four inches wide on the bottom of the front edge of the box for the hen to fly upon when she gets in and out of the nest.

Sprinkle the inside of the box with snuff or small pieces of tobacco leaves.

Make the nest in a shallow saucer shape of dry and clean straw, hay, dry leaves, or pine needles.

After the hen has set two or three days on a nest egg in the old place she will be ready for her new nest.

Late in the afternoon place the thirteen standard variety eggs in the nice new nest.

Next take the hen by the feet, hold her head down and dust the feathers well with insect powder, especially under the wings.

After dark carefully place the hen on her new nest.

Mark the date of setting of hen on a calendar.

Feed the hen while she is setting, with whole corn, wheat or oats. Put this in a little box where she can get it just after she comes from the nest. Fresh water and grit should also be right near the nest.

Dust the sitting hen with insect powder once a week.

Watch the hen to see that she sits regularly. It is well for her to be off the nest about one-half hour each day.

Three weeks after the date of sitting, thirteen little downy chicks should hatch, which the next letter will tell you how to care for.

QUESTIONS.

1. What varieties of chickens are recommended for Poultry Club members?
2. Are you familiar with these varieties?
3. How often should eggs be gathered, and what care should be taken of eggs after gathering?
4. Describe how to make a good nest.
5. What should be the shape of the nest, and what are some good materials for making nests?
6. Why is it a good plan to sprinkle the inside of the nest with snuff or pieces of tobacco leaves?
7. What care should be given the sitting hen?
8. How long does it require to hatch the chickens?

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Lesson No. 3.—Poultry Club.

CHICKEN HOUSES AND COOPS.

By G. C. WATKINS.

In planning to build a new chicken house or remodel an old one remember that you are planning for the comfort of the chickens and your own convenience.

Make the chicken house have plain shed roof covered with roofing felt that will turn any kind of weather.

5 feet high at back or north side.

7 feet high at front or south side.

As long and as wide as you need it.

Have good tight walls on north, east and west.

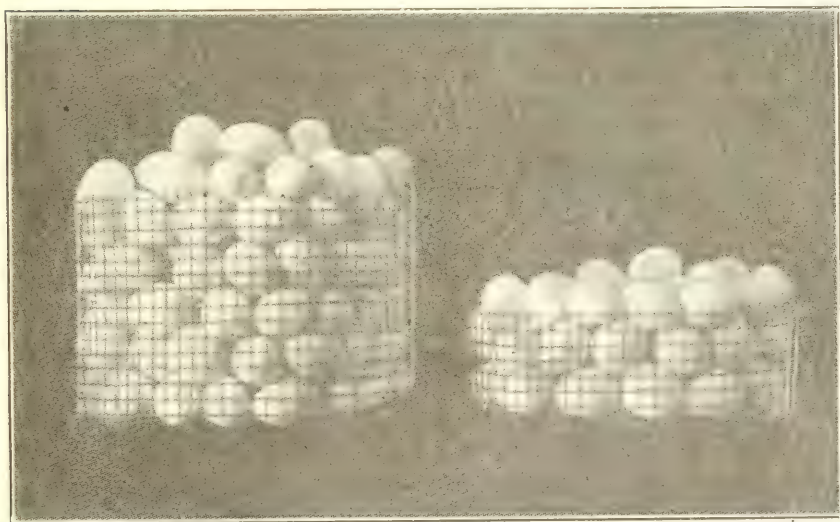
Leave the south side open.

Cover with wire netting.

Have a door in each end.

Build a dropping platform across the north side against the wall just half way from floor to roof. Make the platform 30 inches wide. Place the roosts about a foot above the platform. The nest boxes which should be made of empty soap or cracker boxes may be set under this platform facing the back. This will afford a nice hiding place for the hens when they go on the nest to lay.

Don't make up a lot of nests and nail them fast to the side of the building. Have all furnishings so they can be easily taken out and cleaned.



Showing Comparison of Eggs from Mongrel or Scrub Variety and Pure Bred Variety.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

If you do not care to follow the above plan, build with an open south front so that the sunshine may reach every part of the inside of the house on every sunny day.

Keep the inside of the hen house well white-washed.

Use a little coal oil at the ends of the roost poles where they rest on their supports.

Keep the dropping board covered lightly with fresh soil.

Clean it off Saturday evening and put the droppings in the garden.

An earthen floor is next best after cement.

Keep the floor well littered with straw or leaves which should be cleaned out and put on the garden once a month.

Feed hoppers and water fountains should be hung on the wall or set on small platforms where the litter will not get in them.

Keep everything clean.

BROOD COOPS.

A good brood coop for the hen and chickens may be made from an empty dry goods box about 3 feet long by 2 feet wide and high.

Take the cover off and nail narrow slats across this opening an inch and half apart.

Turn the box down so this will be the front.

Take the board off the back and replace with leather hinges and a button for convenience in cleaning and to put in and take out the hen.

Cover the top with a piece of oil cloth or roofing felt.

Cover the floor with fresh soil and clean out twice a week.

A wide board propped up against the front at night will keep out rats, weasles and skunks.

Keep the hen in the coop and let the chicks run out.

Keep the things sweet and clean and never let the coop get "smelly."

QUESTIONS.

1. In planning a chicken house, what should you keep in mind?
2. Give two plans for a good chicken house.
3. What care should be given to the house?
4. Describe a good coop and tell how it should be kept.

Lesson No. 4.—Poultry Club.

FEED FOR CHICKS.

By G. C. WATKINS.

Do not feed your little chicks for 36 hours after they have been hatched.

First day feed: Butter milk or sour milk in a clean dish.

Second day feed: Toasted bread or thoroughly dried bread, without grease, moistened with buttermilk. Fresh water, or hard boiled eggs and fresh water, or Rolled Oats moistened with buttermilk, and fresh water.

Fifth day: Dry bran in a shallow box. Cover the bottom of the box thickly with bran. Tack a narrow strip around the edge of the box to keep the chicks from scratching out the bran.

Always give plenty of fresh clean water. Make some charcoal for your chicks. Give plenty of fine grit or coarse sand.

Third week feed: A dry mash in a box of: 2 parts ground oats, 2 parts cracked wheat, 1 part corn meal, 1 part cheap flour.

Once a day add to the dry mash two parts bran and moisten with a little buttermilk or water, feed just enough for the chickens to eat up in five minutes.

If you cannot get ground oats, soak oats 24 hours in water, spread them out in a box, cover with a cloth, keep damp until they sprout, then feed.

Feed the dry bread crumbs or rolled oats all the time.

Feed green food all the time.

Make a frame about 8 feet long, 4 feet wide and 3 feet high, cover the top and sides with chicken wire. In one corner nail a box big enough for the hens and chickens to roost in. Keep the hen and chicks in this pen night and day for six weeks. Move the pen once a day over the green grass.



Brood Coops for Hens and Chicks.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

Important points toward success:

First. Always give clean water.

Second. Always give clean food.

Third. Always have eating and sleeping place clean.

QUESTIONS.

1. How long should you wait to feed the chicks after they hatch?

2. What kind of feed is recommended for the first day? Second day? Fifth day? Third week?

3. About how much should chickens be fed at a time?

4. What size pen is recommended for the hen and her chicks?

5. Why is it necessary to have such a pen and how long should you keep them 'n it?

6. Name three essentials toward success.

7. Have you practiced these three and do you know them to be safe?

Lesson No. 5.—Poultry Club.

LICE AND MITES.

By G. C. WATKINS.

Look out for lice and mites as they are the indirect cause of a great many chicken troubles.

The first ones to look for in the Spring are the tiny red mites that live in the cracks of the nest boxes and under the ends of the roost poles or in any little crack or cranny where they can hide during the day and come out and suck the blood of the chickens at night. They cause disease by causing weakness in the fowls due to loss of blood. Sitting hens often desert their nests because of the millions of mites sapping her life's blood. They are very small and you have to look closely to find them.

Cleanliness is one of their worst enemies.

Keep the roost and quarters whitewashed.

Turn the roost poles over and pour a little coal oil on the under side and on the supports where they rest, once a week.

Do not use coal oil about the nests as a drop of coal oil on the sitting hen's feathers will cause every unhatched chick in her nest to die in the shell.

Change the straw in the nest boxes every three weeks.

Burn the old straw and hold the boxes in the flames.

Put a small amount of Scotch snuff in the corners and cracks of the nest boxes before putting in new straw.

Scrape up all the litter and dropping about the chicken house and yard once a week and put them on your garden.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

WHEN THE BABY CHICKS ARE FOUR DAYS OLD.

Make a mixture of one-half coal-oil and one-half lard.

Dip the finger in the mixture and rub a tiny bit into the down on the backs of their heads and under the throat. Do this once a week until they begin to get their grown up feathers. This will keep the blood-sucking head lice from killing them.

Provide a dust bath for the larger chickens and old hens. A box about two feet square and six inches deep filled with clean, dry soil to which has been added a small package of Scotch snuff placed in a dry, sunny location will be used by the biddies in keeping themselves free from body and feather lice. Don't allow the chickens to dust in an ash heap. It ruins the feathers and bleaches the legs of the yellow-legged varieties so you may not be able to win a prize with your chickens, if allowed to do this.

FOR STICK TIGHTS AND BLUE BUGS.

Have the druggist make an ointment of one part iodoform and 20 parts vaseline.

Rub a little on where you find a bug.

Clean up and look for the red mites every Saturday.

Use the preventatives whether you find them or not.

KEEP CLEAN.



A Colony House.

QUESTIONS.

1. Describe the kind of lice that usually injure the chickens early in the spring.
2. Where would you look for these?
3. How do these lice or mites injure the chickens?
4. How would you go about destroying them?
5. Why is it not a good practice to use coal oil about the nest?
6. What treatment is recommended for baby chicks?
7. What is recommended for larger chickens and old hens?
8. Is it a good plan to allow the chickens to dust in an ash heap?
9. What treatment is recommended for stick tights and blue bugs?

Lesson No. 6.—Poultry Club.

SUMMER CHICK DISEASES.

By G. C. WATKINS.

There are three principle causes for baby chick ill.

1. A chill, caused by wading out in the wet grass early in the morning, being caught out in a shower or too early removal from the nest.

2. Too early and improper feeding.

3. The presence of head lice on the chicks themselves or mites in their roosting quarters.

The symptoms of trouble resulting from either of the above causes will be droopiness, peevishness and crying, and nearly always a diarrhea.

If the trouble comes from either of the first two mentioned causes, the chicks should be kept warm and dry, and positively no food allowed them except a little boiled sweet milk to which has been added just a dash of grated nutmeg for two days. If they seem better at the end of this treatment, they may be gradually brought back to a full ration of their regular food. But care must be used that they get only a small quantity of feed at a time and require them to take plenty of exercise, scratching for the food given them. A part of the ration when possible should be clabber milk or butter milk.

If the trouble is caused by lice or mites, the first thing is to get rid of the cause. If you think this is not the cause, be absolutely sure before you treat the chicks for something else. About nine times out of ten, illness in baby chicks, up to six weeks of age is caused by lice and mites.

Look very closely on the head and throat for the head lice and for the nits from which they are hatched. Apply a little carbolated vaseline or a mixture of coal oil and lard to the top

of the head and throat with the end of the finger, being careful not to overdo the amount. Repeat this once a week till the chicks are as large as quails.

Then be sure that there are none of the little red mites in the coops or roosting quarters. Better wash them out thoroughly once every two weeks with strong, hot, lye soap suds, and pour a little coal oil in all the cracks.

Don't let the mother hen lead her little ones out in the grass and weeds on a morning till all the dew has dried off and the sun is shining.

Don't feed sloppy feed of any kind. Feed dry feed a little at a time and often, and be sure to let the little chicks out on the ground where they can scratch.

Always be on the lookout for lice and mites, and keep everything sweet and clean.

QUESTIONS.

1. Name three causes for illness among baby chicks?
2. What are the symptoms for the above illness?
3. How would you treat the chickens for such illness?
4. Should the young chicks be allowed to run in the dew in the morning?
5. Is it a good practice to feed sloppy food to chicks?
6. Is it worth while to keep a close look out for lice and mites?
7. Have you lost chickens from any of the causes given here?

Lesson No. 7.—Poultry Club.

FALL COLDS AND ROUP.

By G. C. WATKINS.

When the fall rains come on with cooler nights, see that the chickens have dry roosting quarters and plenty of fresh air. A good tight roof over them is the main thing, with a good wind-break on the north, east and west. Always keep south front open.

If any of the birds contract colds as shown by watery eyes and nostrils, give a tablespoon of common salts, (Epsom) to each six half grown fowls or three full grown ones. Give in drinking water or mash food and follow by giving each affected bird a two grain capsule of quinine. Then keep enough permanganate of potash in the drinking water to color it a light red, to prevent the colds developing into chronic roup condition.

Remember always, three things for health: Dry quarters, fresh aid and all the sunshine possible.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

GREEN FEED FOR WINTER.

Plenty of green stuff through the winter means more eggs, better health, stronger chicks in the spring and a decided reduction of the feed bill.

Sow "dukes mixture" of winter growing plants: wheat, rye, winter oats, rape, collards, spinach, seven top turnips, crimson clover, red and bur clover, vetch, etc. Any or all of these sown together in good soil where the chickens can range on them at all times during the winter is good. Sow plenty of it and it is surprising what a large amount of grazing the chickens will do.

Club members living near water courses in the rice growing section can add valuable "meat rations to the chickens' bill of fare" by catching "crawdads" with a seine made from rice bags. A bucketful of "crawdads" chopped up with an old spade and fed to the chickens once each week during the milder portion of the winter is one of the greatest egg producing feeds that can be used. Be careful not to overfeed. Those who cannot get the crawdads should try to get green bones and scraps from the local butcher and chop them up fine for the chickens.

Keep everything sweet and clean.

QUESTIONS.

1. What are the symptoms for fall colds or roup among chickens?
2. How would you prevent these?
3. How would you treat the chickens for cold or roup?
4. What are the three things essential for health among chickens?
5. Has green feed any value in feeding chicks in the winter?
6. What crops are recommended for winter feed for chickens?
7. Have you ever used these crops for chickens and did you get good results?

Lesson No. 8.—Poultry Club.

OUTLINE FOR ILLUSTRATED BOOKLET ON GIRLS' POULTRY CLUB WORK.

Use a good grade drawing paper, about 9 by 11 inches.

Make a cover design which will indicate in a neat and attractive manner the contents of the booklet. Do not make this cover design too gaudy in color. In drawing letters, chickens, marginal lines, etc., use water color paint if possible. Bind the booklet at the top with a modest colored baby ribbon or cord. Ask your teacher for coöperation in getting out this illustrated booklet. Illustrate the story as you proceed, using the following title and outline.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

HISTORY OF MY POULTRY.

The purpose of the Girls' Poultry Club Work.
Why I enrolled as a member.

The breed selected and why I selected it.

- a. Number of eggs started with or number of chickens started with.
- b. How and where the eggs were set.
- c. Management and feed of setting hen.
- d. Management and feed of little chicks.

Housing, (if a new house is built.)

- a. Describe kind of house.
- b. Location with reference to direction of front.
- c. Cost and time of building.

(If an old house is remodeled.)

- a. Describe the changes.
- b. Cost and time of rebuilding.

Feeding.

- a. What grains are fed.
- b. How often is water given.

Management.

- a. Tell how often you can clean the house.
- b. Method of cleaning.
- c. Troubles from animals, insects or disease.

Exhibit.

- a. Number of chickens taken to the Fair.
- b. Give time and place of Fair.

Cooking.

- a. Give recipes for different ways of preparing poultry and eggs.

Results.

- a. Number of chickens raised.
- b. Cost of raising.
- c. Number of eggs sold.
- d. Number of chickens sold.
- e. Profits.

Conclusion.

- a. Benefit to you from Poultry Club work.
- b. Your name, address and county.

Lesson No. 9.—Poultry Club.

USE OF POULTRY CLUB PRODUCTS.

(State's Relation Bulletin No. 777.)

Since many women in the Home Demonstration Clubs and girls in the Poultry Clubs are working with poultry, we have a demand for information on the use of poultry products to be used in demonstration. The following material is prepared

to meet this demand. It is important that the agents in their public demonstrations stress the use of only a few of the recipes at one time. Note especially the different uses of tomato sauce, which is one of the concentrated mixtures that we are stressing in the canning work.

Throughout the instructions we would stress the fact that eggs should be cooked at a low temperature if the greatest enjoyment and value of food is to be obtained from eating them. Cooking eggs at a low temperature will keep them from becoming tough, which state renders them less digestible. All measurements are level and should be carefully made. The abbreviations used are: tbsp.—tablespoonful; tsp.—teaspoonful; c.—cup.

SIMPLE WAY OF COOKING EGGS.

Soft Cooked Eggs.—Heat the water in the sauce pan to the boiling point. Remove from fire and place eggs in the water with a spoon. Cover the pan and allow to stand 6 to 8 minutes, keeping the water at the same temperature. The water should be deep enough to entirely envelop the eggs. Remove the eggs and serve immediately.

Allow them to stand 15 to 20 minutes if medium hard cooked eggs are desired.

Hard Cooked Eggs.—Place eggs in a sauce pan of cold water and allow to slowly come to the boiling point. As soon as it begins to boil remove from fire and cover the pan. Let stand for 30 minutes, keeping the temperature even. Chill in cold water; remove shell and serve.

Poached Eggs on Toast.—Break each egg into a saucer. Combine an equal quantity of milk with water and let this reach the boiling point. Carefully slip the egg into the boiling liquid, cover, and remove from fire. Cook until the white is firm, and baste the yolk to form a film over it. Take up carefully with a skimmer and serve on slices of toast. Season to taste.

Steamed Eggs.—Butter slightly the bottom of custard cup and slip an egg into it. Place the cup in a pan of gently boiling water (water should come half way up side of cup); cover and steam until white of the egg is done. Steamed eggs may be served on crisp toast if desired.

Poached Eggs and Tomato Sauce.—Allowing $\frac{1}{2}$ tbsp. of salt to one quart of water, have a shallow pan $\frac{2}{3}$ full of boiling water. Break each egg separately into a saucer and slip them into the water. Cook as for poached eggs and serve with the following sauce:

2 c. canned tomatoes and 1 slice onion or 1 c. tomato sauce.	
$\frac{1}{4}$ tsp. salt.	2 tbsp. flour.
2 tbsp. butter.	$\frac{1}{8}$ tsp. pepper.

Cook tomato and onion 20 minutes, then rub through a strainer. Melt the butter, add dry ingredients and strained toma-

toes. Tomatoes will retain their red color if the flour is browned before using. Pour this over the eggs and serve.

BAKED EGG DISHES.

Shirred Eggs.—Cover the bottom and sides of a small baking dish, preferably an earthen one, with fine bread or cracker crumbs. Break each egg into a saucer and carefully slip it into the dish. Cover with seasoned buttered crumbs and bake in a moderately hot oven until the whites are firm and crumbs are a golden brown.

Egg in Nest.—Carefully separate the white from the yolk of an egg. Beat the white until stiff and pile lightly on a nicely trimmed slice of toast. With a spoon make a depression in the top of the white and slip the egg yolk into it. Place on a baking dish in a moderate oven and when the white has become a golden brown remove and serve. It may be seasoned to taste.:

Egg Baked in Tomato.—Cut a slice from the stem end of a small tomato and scoop out part of the pulp. Refill this with an egg, sprinkle with salt and pepper, and add a few small bits of butter. Cover the opening with buttered crumbs and bake in a moderate oven until crumbs are a golden brown.

EGGS COMBINED WITH SAUCES.

Egg Goldenrod.—

1 c. milk.	4 hard cooked eggs.
2 tbsp. butter.	1 tsp. chopped parsley.
$\frac{1}{4}$ tsp. white pepper.	$\frac{1}{2}$ tsp. salt.
$1\frac{1}{2}$ tbsp. flour.	6 slices toast.

Melt the butter add the dry ingredients and stir until smooth. Add the heated milk slowly, stirring constantly, and allow to come to the boiling point. Separate the yolks from the whites of the hard cooked eggs. Chop the whites finely and add them to the white sauce. Cut the slices of toast in half and after arranging on the platter, pour the sauce over them. Put the yolks through a potato ricer or press them through a strainer, sprinkle them over the sauce. Garnish with parsley and serve.

Delicate Eggs.—

$1\frac{1}{2}$ tbsp. butter.	$\frac{2}{3}$ c. milk.
$\frac{1}{8}$ tsp. pepper.	6 eggs.
$\frac{1}{2}$ tsp. salt.	

Break eggs into a bowl and beat only enough to break the yolks. Add the seasoning and milk. Pour mixture into the upper part of a double boiler in which the butter has been melted. Constantly stir and scrape from the bottom of the pan, allowing to cook until of a creamy consistency.

Dutch Eggs.—

6 hard cooked eggs.

BOYS' AND GIRLS' AGRICULTURAL CLUB MANUAL

$\frac{1}{2}$ cup grated cheese.

1 cup white sauce.

1 sweet red pepper cut into strips.

Cut the eggs into quarters and place about $\frac{1}{4}$ of the amount in a buttered baking dish. Cover this layer with sauce, and sprinkle over it a layer of the cheese; then a few pieces of the pepper. Repeat until the dish is full. Sprinkle bread crumbs on top, dot with butter and brown in a hot oven.

Ecalloped Eggs.—

2 tbsp. butter.

$\frac{1}{2}$ tsp. salt.

2 c. bread crumbs.

2 tbsp. flour.

6 hard cooked eggs.

3 tbsp. grated cheese.

2 c. cooked macaroni.

$\frac{1}{8}$ tsp. pepper.

1 c. milk.

1 c. tomato sauce.

Make a sauce of the flour, butter, salt and pepper, and remove from the fire to add grated cheese. Stir until melted. Combine carefully the cooked macaroni, sliced egg and salt. After covering bottom of baking dish with buttered crumbs add the mixture. Then add rest of crumbs, brown in hot oven and serve with tomato sauce.

Stuffed Eggs.—

$\frac{1}{4}$ tsp. salt.

1 tsp. vinegar.

$\frac{1}{4}$ tsp. mustard.

6 hard cooked eggs.

$\frac{1}{8}$ tsp. pepper.

1 tsp. olive oil.

$\frac{1}{4}$ tsp. paprika.

Butter.

Cut the eggs in half, length-wise. Remove yolks and place them in a bowl. Mash thoroughly and add the seasoning, vinegar and oil. Add enough butter to make mixture of right consistency to shape. Make into balls the size of the original yolks and re-fill whites. Arrange on a serving dish and if desired to serve hot, pour around them one cup of white sauce. Cover and reheat.

Creamed Eggs.—

1 c. milk.

2 tbsp. butter.

4 hard cooked eggs.

2 tbsp. flour.

$\frac{1}{4}$ tsp. salt.

$\frac{1}{8}$ tsp. pepper.

Separate white from the yolks of the hard cooked eggs. Make a white sauce and add to this the yolks which have been pressed through a strainer. The white may be cut into small pieces and also added to the sauce. Creamed eggs are particularly nice when served on toast.

OMELETS.

Plain Omelet.—

$\frac{1}{4}$ tsp. salt

3 tbsp. hot water.

2 tsp. butter.

$\frac{1}{8}$ tsp. white pepper.

3 eggs.

Beat the yolks of the eggs until light and creamy. Add salt, pepper and milk. Beat whites until stiff and fold them into the

yolks. Heat a small frying pan and put in enough butter to cover the bottom of the pan, turn in the omelet and spread it evenly. When the omelet is set, carefully fold and turn out onto a hot platter. Serve immediately.

French Omelet.—

4½ tbsp. milk.	½ tbsp. salt.
2 tbsp. butter.	1/16 tsp. pepper.
4 eggs.	

Beat the eggs slightly, just enough to mix yolks and whites, then add the milk and seasoning. Put the butter in a small hot frying pan and when melted turn mixture into the pan. While this is cooking, mix slightly with a fork until the whole is of a creamy consistency. Place on a hotter part of the fire and allow to brown quickly underneath. Fold and turn on a hot platter.

Spanish Omelet.—Mix and cook a French omelet. Serve with tomato sauce in the center and around the omelet:

Tomato Sauce.—

2 tbsp. butter.	½ tbsp. capers.
1½ tbsp. onion.	3 tbsp. mushrooms.
1 c. tomatoes.	½ tsp. salt.
Cayenne.	

Brown onion (finely chopped) in the butter. Cook the tomatoes with the onion for 15 minutes. Add the capers, mushrooms and seasoning. If desired substitute 3 tbsp. peas and 2 tbsp. chopped red peppers for the capers and mushrooms.

Egg Souffle.—

2 tbsp. butter.	½ c. cream.
1½ tbsp. flour.	1 tsp. salt.
1½ c. milk.	Cayenne.
5 eggs.	

Cream the butter, add the flour and gradually the scalded milk and cream. Cook in double boiler five minutes and add yolks of eggs which have been beaten until lemon colored. Add seasoning and fold in stiffly beaten whites. Turn into a buttered dish, set in a pan of hot water and bake in slow oven until firm.

CUSTARDS.

Soft Custard.—

1 c. milk.	2 tbsp. sugar.
Vanilla.	¼ tsp. salt.
2 eggs.	

Heat the milk in a double boiler. Mix the eggs in a bowl with the sugar and salt. Add hot milk slowly, stirring, and return mixture to the double boiler. Cook until custard will coat a silver spoon. Strain and serve. If the custard curdles, set the pan into cold water and beat the custard until smooth.

Steamed or Baked Custard.—

1 pt. milk.	$\frac{1}{4}$ c. sugar.
2 eggs.	$\frac{1}{8}$ tsp. salt.
$\frac{1}{8}$ tsp. nutmeg.	

Mix eggs as for soft custard. Strain into custard cups and steam until firm over hot water which is boiling gently. To bake: Strain the custard into cups and place in a pan of warm water. Bake in a moderate oven until the custard is firm. To test a steamed or baked custard, slip a knife blade to the bottom of the cup in the center of the custard and draw out without turning. If the knife is not coated the custard has cooked enough. Grate the nutmeg over the surface and cool before serving.

Floating Island.—

$2\frac{1}{2}$ c. milk.	5 eggs (yolks).
$\frac{1}{8}$ tsp. salt.	$\frac{1}{2}$ tsp. vanilla.
$\frac{1}{2}$ c. sugar.	

Prepare as a soft custard. The whites should be beaten light and 6 tsp. of powdered sugar added for the meringue. When the custard is cool it may be poured into sauce dishes and the meringue dropped in large spoonfuls into it.

Custard Pudding.—

$\frac{1}{2}$ c. pearl tapioca or rice	2 c. milk.
2 eggs (yolks).	2 eggs (whites).
$\frac{1}{2}$ tsp. vanilla.	$\frac{1}{8}$ tsp. salt.
$\frac{1}{2}$ c. sugar.	

Soak the tapioca in enough hot water to cover it, until it absorbs the water. Add the milk and cook in a double boiler until the tapioca is soft and transparent. Combine the yolks of eggs with sugar and salt and add to the mixture in the double boiler. Cook ten minutes. Add stiffly beaten whites and flavoring and when cold, serve. Rice must be cooked in boiling water until soft.

Apple Whip.—

2 c. apple sauce.	Cream for serving.
4 eggs (whites).	

Cook 6 or 8 medium-size apples until soft in just enough water to keep them from burning. Add sugar to sufficiently sweeten and $\frac{1}{8}$ tsp. grated nutmeg. Cool. Press the apple sauce through a strainer and add to it the stiffly beaten whites of eggs. Beat until light and foamy. Pile onto saucers and serve with fresh cream or a custard sauce made of the egg yolks. This sauce may be prepared by the same method as for soft custard, omitting the whites of eggs. Canned fruit such as peaches, figs, cherries, or guava may be substituted in the same proportion as the apples.

EGG SALAD AND SANDWICHES.

Stuffed Egg Salad.—

Crisp lettuce.

Mayonnaise.

6 stuffed eggs.

Follow recipe for stuffed eggs. Arrange 2 half eggs in nest of crisp fresh lettuce on salad dishes. Add mayonnaise dressing. Garnish with strips of sweet red pepper and serve.

Egg Sandwiches.—

6 hard cooked eggs.

Mayonnaise or salad dressing.

Remove the yolks and mash them thoroughly. Add mustard, salt, and pepper to taste and combine with enough mayonnaise to make of proper consistency to spread. Slice the whites very thin. Have bread cut thin and spread one slice with yolk mixture; add a few slices of the whites and place on other slice of bread which has been thinly buttered. Sandwiches may be kept fresh by folding in a damp napkin over which has been placed a dry napkin. Wrapping in paraffin paper is also an effective method.

Metropolitan Sandwiches.— $\frac{1}{2}$ lb. cheese.

3 hard cooked eggs.

3 tbsp. melted butter.

3 tbsp. cider vinegar.

1 tsp. prepared mustard.

 $\frac{1}{4}$ tsp. pepper. $\frac{1}{2}$ tsp. salt.

Mash yolks, add butter, salt, pepper, and mustard, and mix until smooth. Grate cheese or put through a food shopper; chop whites of eggs. Mix all thoroughly, stir in vinegar, and spread between three or four thin slices of buttered bread; press together, and cut in long, narrow strips.

EGG SAUCES AND DRESSINGS.

Hollandaise Sauce.— $\frac{1}{2}$ c. butter.

1 c. boiling water.

2 eggs (yolks).

 $\frac{1}{2}$ tsp. salt.1 $\frac{1}{2}$ tbsp. lemon juice. $\frac{1}{16}$ tsp. cayenne.

Cream the butter, add the yolks one at a time and beat well; then add the lemon juice, salt and pepper. A short time before serving add boiling water. Cook over boiling water and stir until the mixture is of the consistency of custard, then serve immediately.

This is a delicious dressing to serve with cauliflower, asparagus tips, or with fish.

Egg Sauce for Fish.— $\frac{1}{2}$ c. butter.

3 hard cooked eggs (cut in

2 tbsp. flour.

 $\frac{1}{2}$ -in. slices).1 $\frac{1}{2}$ c. boiling water. $\frac{1}{16}$ tsp. salt.

Melt the butter, add flour and seasoning and gradually the boiling water. Add sliced eggs and serve.

Mayonnaise Dressing.—

$\frac{1}{2}$ tsp. mustard.	2 tbsp. vinegar or lemon
$\frac{1}{4}$ tsp. salt.	juice.
2 eggs (yolks).	Cayenne.
1 c. olive or Wesson oil.	

Mix yolks and add mustard, salt, and cayenne. Add the oil a few drops at a time and stir steadily. When half the oil has been used, or when the dressing becomes very thick, alternate with a few drops of vinegar. Continue this process until both are used. If the dressing curdles, start the process over again, beginning with a fresh yolk in a clean bowl, adding a little of the curdled dressing at a time and stirring constantly.

Cooked Salad Dressing.—

$\frac{1}{4}$ tbsp. mustard.	$\frac{1}{8}$ tsp. cayenne pepper.
$\frac{1}{4}$ tbsp. salt.	2 eggs.
2 tbsp. flour.	2 tbsp. butter.
1 tbsp. sugar.	$\frac{1}{2}$ c. vinegar.
$\frac{3}{4}$ c. sweet milk.	

Rub together the dry ingredients and add egg yolks, slightly beaten. Add melted butter, cold milk, and hot vinegar in the order named, stirring until perfectly smooth. Cook the mixture in a double boiler until thickened. Set the pan into a bowl of cold water and beat well until cool and smooth.

Golden Dressing.—

$\frac{1}{4}$ c. lemon juice.	6 tbsp. sugar.
$\frac{1}{4}$ c. light colored fruit juice.	2 eggs (yolks).

Beat the eggs, add the fruit juice, stir gradually into the lemon juice and add the sugar. Cook in a double boiler and stir until the mixture coats a spoon. Cool quickly by placing pan into cold water, beating the mixture at the same time. This dressing is combined with fruits to be served as salads or desserts. Some attractive combinations of Canning Club products are:

1. Canned peaches, cherries, and fresh apples, using cherry juice with the lemon in the dressing.
2. Canned figs, fresh oranges, and pecans, using orange juice in the dressing.
3. Guava, pineapple, and grapefruit, using pineapple juice in the dressing.
4. Canned berries or fresh grapes, apples, and pears, using scuppernong juice in the dressing.

Any of these dishes may be made especially attractive by garnishing them with nuts, whole cherries, berries, or marshmallows.

RECIPES FOR USE OF CHICKEN.

Dressing and Cleaning.—

Remove feathers. Hold the bird over a flame to remove hair and down, constantly changing the position until all parts of the surface have been exposed. Cut off the head and draw out the pin feathers, using a small pointed knife. Cut through the skin around the leg, about $1\frac{1}{2}$ inches below the leg joint, care being taken not to cut the tendons. Snap the bone and take the foot in your right hand, holding the bird firmly in the left, pull off the foot and with it the tendons. In old birds the tendons must be drawn separately, which is best accomplished by the use of a steel skewer. Make an incision through the skin below the breast bone, just large enough for the hand, and remove the entrails, gizzard, heart, and liver. The three last named are called giblets. The gall bladder, lying just under the surface of the liver, is removed with the liver, care being taken not to break it. Inclosed by the ribs and on either side of the backbone are the lungs, which are bright red in color and spongy. These must be entirely removed. Remove also the kidneys, which lie in the hollow near the end of the backbone. The windpipe may easily be removed by putting two fingers under the skin close to the neck. Remove the crop, which will be found adhering to the skin close to the breast. Draw down the neck skin and cut off the neck close to the body, leaving the skin long enough to fasten under the back. Remove the oil bag and wash the bird, allowing cold water to run through it but not allowing the bird to soak in the water. Wipe inside and out and examine carefully to see that everything has been removed.

Trussing.—

Draw the thighs close to the body and hold by inserting a steel skewer under the middle joint, running it through the body and coming out under the middle joint on the other side. Cut a piece about an inch wide from the neck skin, and with it fasten the legs together at the ends; or cross the drumsticks, tie securely with a long string and fasten to tail. Place the wings close to the body and hold them by inserting a second skewer through the wing, body, and wing on opposite side. Draw the neck under the back and fasten with a smaller wooden skewer. Turn the bird on its breast, cross the string attached to the tail and draw it around each end of the lower skewer; again cross the string and draw around each end of upper skewer, fasten the string in a knot and cut off the ends.

Chicken Broth.—

$1\frac{1}{2}$ lbs. meat and bone. 1 qt. cold water. Salt.

Draw, singe, clean thoroughly and disjoint the fowl. After removing the meat from the bone grind it and then add the bones.

Put all in a saucepan, add the water and stand for 15 minutes in a cold place. Cook over moderate heat in a double boiler for 6 or 8 hours, or cook in a fireless cooker. Strain and season. When cold, remove the fat, reheat and serve.

Stewed Chicken.—

Dress and cut up medium-size chicken. Put into a kettle and cover with water. Add salt and simmer slowly several hours, until the meat is very tender. After lifting out the chicken make a thickening, using 2 tbsp. flour and adding 1 pt. of the stock for gravy. Season to taste.

Dumplings may be cooked in the stock and served with gravy.

Chicken prepared in this way may be cooked in a fireless cooker.

Broiled Chicken.—

Singe and wipe, and with a sharp knife cut through the backbone the entire length of the bird. Lay open the bird and remove the contents. Remove the ribs and breast bone and cut the tendons at the joints. Sprinkle with salt and pepper, place in a well-greased broiler and broil for about twenty minutes over a clear fire, turning frequently so that all parts may be equally browned. Remove to a hot platter and spread with soft butter.

BAKED CHICKEN DISHES.

Baked Chicken.—

Dress, clean, stuff, and truss the chicken. Place on its back in a baking pan, rub the entire surface with salt, then spread two tablespoonfuls of butter on the breast and legs. Dredge the bottom of the pan with flour, place in a hot oven and when flour is well browned, reduce the heat and then baste. Continue basting every ten minutes until chicken is cooked. For basting, use tablespoonful of butter melted in two-thirds cup of boiling water and after this has gone, use the fat in the pan. During the cooking turn the chicken frequently to brown it evenly. If a glazed surface is preferred do not dredge during the baking, but if a crusted surface is desired, dredge with flour during the baking. When the breast meat is tender the bird is sufficiently cooked. A four-pound chicken requires about 1½ hours. This method of baking chicken can be used in a fireless cooker provided heated disks or soapstones are used to furnish sufficient heat to brown it.

Escalloped Chicken.—

Slightly butter an earthen baking dish, put into it a layer of cold cooked chicken which has been sliced or cut in cubes, then a layer of rice or boiled macaroni. Alternate until the dish is full and pour over it tomato sauce. Cover with buttered bread crumbs and bake in a hot oven until brown.

Chicken Souffle.—

1½ c. scalded milk.	2 eggs (yolks), well beaten.
½ c. butter.	½ tbsp. parsley, chopped.
3 tbsp. flour.	2 eggs (whites) beaten stiff.
½ c. soft bread crumbs.	⅓ tsp. pepper.
2 c. cold cooked chicken.	

Make a sauce with butter, flour, salt, pepper, and milk. Add the bread crumbs and let stand until thoroughly blended. Add chicken, yolks of eggs, and parsley, and fold in the stiffly beaten whites. Turn into a buttered baking dish and bake thirty minutes in a slow oven. Serve immediately.

CHICKEN COMBINED WITH SAUCES.

Creamed Chicken on Toast.—

2 c. cold cooked chicken.	¼ tsp. salt.
2 tbsp. butter.	⅓ tsp. celery salt.
2 tbsp. flour.	6 slices toast.
1 c. milk.	

Make a white sauce and heat the chicken in the sauce. Add the celery salt, pour the chicken over the toast and serve.

Chicken a la King.—

1 tbsp. chicken fat.	⅓ c. salted mushrooms.
1 tbsp. flour.	2 eggs (yolks).
⅓ c. canned pimentos.	½ c. cream.
1 c. cold boiled fowl, cut in strips or cubes.	¼ c. milk.
½ c. chicken stock.	2 tsp. butter.
	½ tsp. salt.

Melt the fat, add flour and stir until smooth. Add gradually the stock, milk, and cream. When this boils add salt, butter, fowl, mushrooms, and pimentos. Let it come to the boiling point and add egg yolks slightly beaten. Serve on toast.

Chicken Salad.—

1 c. cold cooked chicken.	1 c. celery.
Mayonnaise dressing.	

Cut chicken into half inch cubes. Cut celery into small pieces and combine with chicken. Add enough mayonnaise dressing to make it possible to mold the salad. Serve on crisp lettuce leaves and garnish with slices of hard cooked eggs.

CHICKEN COOKED IN FIRELESS COOKER.

Stuffed Chicken.—

Dress medium-size chicken and stuff with bread stuffing. Sear it in the oven for 15 minutes. Place in fireless cooker and when hot soapstones are used, cook 2 hours or until thoroughly tender. Without hot soapstones, cook 3 hours.

Creole Chicken.—

1 medium sized chicken.	¼ lb ham or 2 or 3 slices of
6 tomatoes or 1 No. 2 can to- matoes.	bacon chopped finely.
3 sweet red peppers cut in small cubes.	1 bay leaf.
3 sweet green peppers cut in small cubes, or 1 No. 2 can peppers.	2 tbsp. chopped parsley.
	2 tsp. salt.
	1 onion (size of egg).
	2 tbsp. butter or bacon drip- pings.

Place the chicken with 1 c. boiling water in the fireless cooker vessel, cover and simmer for ½ hour. Brown the chopped onion in the fat. Simmer tomatoes for 15 minutes with the bay leaf, strain, and pour over the onions. Add minced ham and parsley and cook for 15 minutes longer. To this mixture add the chopped peppers and chicken stock and bring to a boil. Place the chicken in the cooker vessel, pour over the mixture of vegetables and let it boil 5 minutes. Put at once into the fireless cooker. With hot soapstones let the chicken stay in the cooker for 2 hours; without soapstones, for 3 hours.

Bread Stuffing.—

1 c. bread.	Salt and pepper.
1½ c. butter.	Thyme.
¼ c. boiling water.	Sage.

Add seasoning to the bread crumbs and pour boiling water, to which the butter has been added, over the bread crumbs.

Chicken Spaghetti.—

Stew the chicken in part of the fireless cooker and cook spaghetti in another container of the cooker. The spaghetti should be boiled 5 minutes over the fire, well covered with boiling salt water and then put into the fireless cooker. When the chicken is tender, remove from the stock and make the gravy. Arrange spaghetti on platter and place chicken on it and pour the gravy over it. This might also be served with tomato sauce.

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